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Editorial Notes

Gas Charges Committee

We conclude to-day our report of the proceedings of the Joint Select Committee appointed by both Houses of Parliament to consider the powers of regulating charges possessed by the South Metropolitan Gas Company and other companies authorized to operate under the basic price and basic dividend system. The Enquiry arose, of course, out of the protests launched against the tariff which the South Metropolitan Gas Company introduced last year and later withdrew. The parties represented at the hearing were, in addition to the South Metropolitan, the London County Council, the Gas Light and Coke Company, the National Gas Council, the Gas Companies' Protection Association, the City of London Corporation, and a number of local authorities throughout England and Wales.

The Enquiry has been a lengthy one—our report has extended to 34 columns of the "Journal"—and the Committee has had before it a great mass of evidence. The question centred round the basic price system in relation to the protection afforded to the small consumer. The main proposals of the L.C.C. were the compulsory publication, under Section 6 of the Gas Undertakings Act, 1934, by every basic price company of the price at which the company is prepared to supply ordinary consumers, and the setting up of a tribunal to review this price. Counsel for the South Metropolitan Gas Company intimated that, if the Company introduced a tariff, ample notice would be given, and if the L.C.C. objected on the ground that under the tariff the price to the small consumer would be unreasonably increased, the Company would not bring the tariff into operation until it had the approval of the Board of Trade. The case for the National Gas Council, the Gas Companies' Protection Association, and the Gas Light and Coke Company was deprecation of any tribunal at all being given further control over gas companies in the way suggested either by the L.C.C. or by the South Metropolitan Company. In his evidence, Sir David Milne-Watson stressed before the Committee the extreme undesirability, from the point of view of public interest, of anybody being able to control prices or to prevent an increase in the actual price which in the particular circumstances a company found inevitable—the importance of not placing on the Gas Industry restrictions stronger than those placed on electricity undertakings.

We do not intend at this stage to embark on criticism or attempt to prejudice the issue while the Committee is deliberating the matter. We shall return to the whole Enquiry again at the appropriate time—when the Committee has issued its Report, a document which will obviously be of the greatest importance to the future welfare of the Gas Industry. We may call attention here, however, to the concluding remarks of the Chairman of the Committee, Sir Alan Anderson, at the close of the Enquiry. He said that, notwithstanding a larger measure of agreement, the key to the position was not yet apparent. Whether the Committee would be able to find the ideal solution, nobody could say. His own impression was that in such a rapidly-changing industry as the Gas Industry, now so remote from a monopoly, it was difficult to suppose that any formula would fit every case. Whatever formula was applied would more or less be wrong if it was not applied with discretion. The main thing was not to cramp the competitive power of the Industry. It was agreed that this was of extreme importance.

Another Pioneer Enterprise

Last week, as reported in the "Journal" for March 17, the Minister of Health, Sir Kingsley Wood, opened Kensal House, an estate of model flats for the planning and erection of which the Gas Light and Coke Company is responsible. In our issue to-day we give a full illustrated description of this remarkable and wholly admirable pioneer enterprise which is an outstanding expression by a huge public utility undertaking of its interpretation of public service. Kensal House stands as a revelation to housing authorities and as another noteworthy instance of the vision of the world's largest gas undertaking. The Gas Light and Coke Company enjoys, of course, unusual facilities; but while this new estate reflects credit on and will undoubtedly benefit the Company, it also redounds to the prestige of the whole Gas Industry, which in ever-increasing measure has cause to be grateful to the Gas Light and Coke Company for taking full advantage of the facilities at its command.

The Company started with the conviction that working class tenants could be provided with a service for cooking, hot water, room warming, and lighting offering every amenity that a reasonable middle-class family might demand—and this without any abnormal capital outlay and at a running cost within the means of working class families. Kensal House is the translation of this conviction into practical effect. The area selected

for the estate was Kensal Rise, one of the worst slum districts in London; and the enterprise obtained the whole-hearted co-operation of the Kensington Borough Council and the Ministry of Health. Kensal House was built, it should be emphasized, in strict conformity with the terms of the Housing Acts, as to permitted areas, financial arrangements, and choice of tenants, who were nominated by the Kensington Council from its slum clearance areas. In all respects it is comparable economically with other publicly operated housing schemes; and rents have been fixed at a level adequate to cover cost, including the return on capital borrowed. The flats are let at 11s. 6d. a week, including rates, for the five-roomed (three bedroom) flats and 9s. 6d. for the two bedroom flats.

Kensal House is not merely a practical specimen of low-cost housing construction; it represents the best that builders could command in the way of up-to-date planning and design. The advice was sought of six leaders in the field of housing design, and there has been developed much more than a block of dwellings. On a site which was originally part of the Kensal Green Gas-Works has been constructed an estate with clubs for the tenants, their wives, and children of all ages, together with a nursery school run in collaboration with the Board of Education and the London County Council. What was the site of a gasholder has been converted into a playground, and a terrace and lawns have been constructed for the grown-ups. There are 68 flats, 54 with three bedrooms and 14 with two bedrooms; each flat has a kitchen, a bathroom, a large family balcony, and a specially ventilated balcony for drying clothes. The equipment consists of an open coke fire, gas ignited, in the living room, a gas fire in the principal bedroom, with a gas point in the smaller bedrooms, an enamelled cooker fitted with automatic oven-heat control, a wash-copper, a point for a gas iron, and a multi-point instantaneous water heater which supplies the sink, copper, and bath. The lighting is by gas and is switch controlled. After two months' occupation by a large body of ex-slum dwellers—totalling 379—the estate is in excellent order. The change has given the tenants a new sense of pride and dignity and they co-operate to maintain this unique urban village neat and tidy.

At the opening ceremony of this enlightened contribution to London's slum clearance and re-housing on March 15 Sir Kingsley Wood referred to the enterprise as an example to the country that homes do not consist alone of bricks and mortar, and he suggested that if anyone wants to see a modern miracle he had only to observe the wonderful transformation which has taken place on the Kensal site. "Kensal House as a whole," he said, "comprises a long-term investment for the nation." It is also a long-term investment for the Gas Light and Coke Company and for the Gas Industry in general.

Outside Activity

THE opening of Kensal House was not the only event. Last week was, in fact, packed with functions which impressed us once again with the great number of claims made upon the time and energy of those who for the time being are representing various phases of the Industry's activities. That these claims are being met so well is tribute to the manner in which the duties of office are carried out by the elected holders, who on many occasions must be hard put to decide which of several alternative functions he should attend. The most difficult task in this respect is, of course, that of the President of The Institution of Gas Engineers, whose duties include—quite rightly—a personal interest in the doings of the District Associations as well as the Industry's representative at the proceedings of allied societies. On Tuesday of last week, for instance, there were the meeting of the Southern Association of Gas Engineers and Managers, the luncheon and Conference of the Combustion Appliance Makers' Association, the dinner of the Illuminating Engineering Society, and the dinner of the Association of Tar Distillers—all held in London.

Nor are the affairs within the Industry the only consideration of the gas executive. His activities are not so confined, for fortunately there is a growing appreciation of the value to the Gas Industry of executives entering public life and taking an active part in the doings of such bodies as the Rotary movement, and so on. Just recently we have recorded in the "JOURNAL" the election of Mr. W. W. Townsend to the Colchester Town Council, and of Mr. G. Stevenson to the Derby County Council. Addresses on the progress and scope of the Gas Industry, given to Rotary Clubs, and the like, are frequently mentioned in our news pages. In this connection the contributor of "Thermal Thoughts" in this month's "GAS SALESMAN" has some observations which are very much to the point, and he offers sound advice to would-be speakers. He remarks that these organizations are accustomed to being addressed by practised speakers or professional lecturers, and that the efforts of gas officials obviously invite comparison with the expert. Even so, thorough knowledge of the subject, personality, and sincerity go a long way to make up for lack of adroitness—provided thought and care are given to the preparation of the talk. The following is from the article to which we refer: "Paradoxical as it may seem, one of the most useful talks I can remember—it got a splendid notice in the local Press—was a talk on salesmanship to the retailers of the district, under the auspices of the local Chamber of Trade. The speaker studiously refrained from any mention of gas or his own Industry's selling problems, but the necessary tie-up consisted of the knowledge that the lecturer was a prominent gas official who was both a buyer and a seller. The fact that he had made a comprehensive study of salesmanship caused him to appear to his hearers to be an expert on their own problems. That he made many friends for his undertaking with that one performance will be realized by all who have successfully attempted this form of indirect selling."

The point is, of course, that the value of the opportunity afforded by these talks in helping to make the public gas-minded can only be realized if the talks are adequately "put across"—a task which adds still further to the work of the gas executive, but one which can yield, if skilfully tackled, fruitful and widespread results.

The Bold Policy

AN Address 100% pro gas was given at the recent meeting of the Manchester District Association of Gas Engineers by Councillor W. P. Jackson, Chairman of the Manchester Corporation Gas Committee. Our report of it appeared in the "JOURNAL" last week. It was a rousing, straight from the shoulder talk, a model of its kind; it would certainly not make good reading for the electricians. His plea was for the adoption of a bold policy throughout the Gas Industry. Every undertaking, he urged, must be aggressive; it should more intensively endeavour to increase its sales. In regard to the subject of offering attractive rates for gas, he referred to the

fact that delay in adopting improved methods of charge is often—we should say almost always—due to timid thoughts on estimated losses which might result from the operation of a new tariff. In practice, however, the consumption of gas has often so increased as to cover the loss estimated and consolidate the gas business. In other words, by adopting a bold policy and taking a business risk—and it is obvious that the gas undertaking must make the first move—both the consumer and the gas undertaking have benefited. "There is a time," said Councillor Jackson, "when every business has to live dangerously. No business can live in the past, and the Gas Industry must divest itself of its crinolines. A change must definitely be made in the outlook of those undertakings which are concerned mainly about building up large reserve funds."

Speaking of the magnitude and variety of the services rendered by the Gas Industry, Councillor Jackson mentioned the services of our Industry in the last War—work which has not been sufficiently realized or sufficiently valued. The Industry to-day is more than ever able to benefit the nation, and it is our own fault if scant attention is paid in high quarters to what the Gas Industry is doing and is further capable of performing. Lack of recognition must not be an excuse for complacency; it should act as a spur to greater activity, and a real determination to make things known. Only the other day we listened to an Address on petroleum gases given by an eminent authority in the oil world. To enable a mental picture to be drawn, he based his comparisons not on the therm but in terms of what he called a "Battersea unit"—the capacity of the huge waterless gasholder at Battersea which has as its close neighbours the towering chimneys of two modern electricity generating stations. After his Address he confessed to us that his adoption of the "Battersea unit" had led him, with surprise, to an appreciation of the magnitude of the Gas Industry in Great Britain. Many more people would be astonished if they knew the facts; and the remedy is in our own hands.

Councillor Jackson quite rightly drew attention to the fact that to-day consumers have a choice of fuels and that it is only by personal contact and good service that additional loads can be built up by the Gas Industry. We live in an age of service, and where the difference in price of the fuels in use is small the load goes to the industry ready to give assistance and, if necessary, instruction. Prompt and efficient service does, of course, characterize the working of all progressive gas undertakings, those responsible for the conduct of which realizing that the cost of this service is amply returned by satisfaction of the consumer, whose demands to-day are very different from what obtained a comparatively few years ago.

International Gas Conference

In last week's "Journal" it was announced that the 3rd International Gas Conference of the International Gas Union is to be held in Paris from June 12 to 16. The Conference takes place during the period of the Paris International Exhibition, at which the Gas Industry will be represented by a Gas Pavilion. This should prove an added attraction in ensuring that the Conference shall be accorded good support, for the Exhibition will, we have no doubt, judging from past experience, be a fruitful source of ideas. Though the Conference follows closely on the heels of the Annual Meeting of The Institution of Gas Engineers (June 1-4) its importance warrants the support of British gas engineers; and it will have been noted that comprehensive travel, hotel, and other arrangements are being made for a large party of members of the Institution and others connected with the Gas Industry, led by Mr. H. C. Smith, who will then be President of the Institution, to attend the Conference. These arrangements are in the hands of Mr. J. R. W. Alexander.

It will also have been noted that, of the eight Papers to be submitted, two are by British Authors, and the programme also allows for the discussion of Reports of five International Commissions. The subject-matter of these Reports is as follows: German Commission, Co-ordination of the methods of testing and guaranteeing gas making plants; Swiss, Systems of carcassing buildings; French, Co-ordination of methods of testing gas appliances; Belgian, Methods for the development of the industrial use of gas, including the hotel industry; and gas tariffs. And in addition to the business sessions the provisional programme comprises visits to works and laboratories, to the Paris International Exhibition and other places of interest, and social functions for delegates and ladies. The arrangements made should result in a highly successful and enjoyable Conference.

Cash or Credit

There were doubtless a good many million wireless enthusiasts listening in on a recent evening to the broadcasting of the "National" programme, and one could not help wondering by what percentage the total number would have been reduced had there never existed any possibility of obtaining receiving sets on extended credit. Did any of those who have secured their apparatus on hire-purchase terms experience an uncomfortable feeling when they heard the discussion on the merits and demerits of this system? Probably not, for it has placed within their reach the most wonderful of modern inventions, and thus opened up intellectual and recreative possibilities that could by no other means have been theirs, unless they had at command (what might be to them) a substantial sum in cash. Pedestrians might be pleased if all the cars which are being acquired on the instalment plan were swept off the roads, but would the motoring fraternity as a whole be gainers?

These are but two examples—though two of major importance—in which hire-purchase has become part of the life of to-day. We have no hesitation in asserting that they are sufficient to demonstrate that hire-purchase can be advantageous, and that it is in the abuse, and not in the use, of the system that danger lies. The business of the world at the present time is founded upon credit. This credit, however, has to be paid for, and it must always be a question of whether the cost is worth while. The man who possesses the cash wherewith to pay for what he requires occupies an unassailable position—a position that can never be achieved by the credit customer without sacrifice, albeit a sacrifice which may be well worth while.

When not included in some other charge—as it is when the transaction is between a gas undertaking and a consumer—the collecting of small instalments at more or less frequent intervals must prove somewhat costly, and one is not surprised, therefore, to find that the interest rates are apt to be substantially higher than those quoted by banks for loans against satisfactory security; but would the banks be able to maintain these lower interest rates if loans were to be repayable at the rate of a shilling or

two, or a pound or two, weekly or monthly, over one, two, or three years? We doubt it. And in any case, a man who possesses no marketable security, and therefore cannot approach a bank, may still be ambitious enough to desire a wireless set, or some other of those things which are able to make life a so much better proposition than it was years ago, and he may be perfectly willing to pay the price of his need. Why should he not do so? He must walk warily, maybe, but that might be equally necessary in other business transactions.

It would be a pity if hire-purchase, as a system, of which the Gas Industry has made so extensive, and so beneficent, a use, were to get a bad name because of abuses in individual cases.

PERSONAL

Dr. Charles Carpenter.

Acting on medical advice, Dr. Charles Carpenter has tendered his resignation of the Presidency of the South Metropolitan Gas Company and the Chairmanship of the South Suburban and Commercial Gas Companies. His colleagues, while receiving his resignation with much regret, are glad to know that they will still have the benefit of his knowledge and experience, as he will retain his seat on each of the three Boards. Mr. FRANK JONES has been elected to succeed him in the Presidency of the South Metropolitan Company and in the Chairmanship of the other two Companies. Mr. A. M. PADDON has been appointed to the Vice-Presidency and a Managing Directorship of the South Metropolitan Company.

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Retirement of W. L. Galbraith.

After nearly twenty years as Secretary of the Gas Light and Coke Company, Mr. William Lyle Galbraith, M.A., has retired. Mr. Galbraith is of Scottish origin, son of a civil engineer who was a member of the firm of Galbraith & Church. He was educated at Winchester College and Merton College, Oxford, and afterwards read for the Bar, being "called" in 1896. After practising for some years as an equity draftsman and conveyancer at Lincoln's Inn, Mr. Galbraith entered the service of the Board of Education and was originally employed in their legal department and later in connection with technical education in London and the South. He was appointed Secretary of the Gas Light and Coke Company in succession to the late Mr. W. Beckford Long in January, 1918. Mr. Galbraith was missed on the occasion of the Annual Meeting of the Company in February, from which he was absent through indisposition; but his many friends in the Industry will look forward to meeting him often in the future at the social festivities where they have had the pleasure of seeing him in the past.

Mr. Galbraith is succeeded by Mr. BRIAN F. WOOD, while Mr. F. PIERSON has been appointed Assistant Secretary.

Mr. Wood is the son of Mr. F. F. Wood, Secretary of the Croydon Gas Company, and joined the Company's staff in 1927, being appointed Assistant Secretary in 1934. He was at Selwyn College, Cambridge, from 1924 to 1927, where he took his degree in Classics and Law, and rowed in his College boat. He was called to the Bar at the Middle Temple in 1932. He is 31 years of age, and is believed to be the youngest man to hold the office of Secretary in the 125 years of the Gas Light and Coke Company's history.

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We learn that Mr. W. J. SANDEMAN, General Manager of the Croydon Gas Company, has been appointed a Justice of the Peace for the County Borough of Croydon.

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At the age of 77, Mr. ROBERT BARRETT, has retired from the position of Engineer and Manager of the Clitheroe Gas Department.

Mr. Barrett joined the Clitheroe Water Undertaking, of which his father was Manager, in 1880, but was transferred to the Gas Undertaking a year later, succeeding to the Managership at the age of 35. He has been responsible for much re-construction at the Clitheroe Works, erecting one of the earlier waterless gasholders in this country in 1930.

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Mr. A. T. GREEN, F.I.C., Assistant Director of Research, British Refractories Research Association, has been appointed Director of Research of the Association in the place of Dr. J. W. Mellor, F.R.S., who resigns on March 31.

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It will be of interest to the Gas Industry to learn that the EARL OF DUDLEY, M.C., President of the British Gas Federation, has accepted the Chairmanship of the Firm of Horseley Bridge and Thomas Piggott, Ltd., Tipton.

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Congratulations to a Past President, Mr. RALPH E. GIBSON, of Liverpool, were wired on March 18 by the Secretary of The Institution of Gas Engineers, on behalf of the President, Council, and Members, on the decision of the University of Liverpool to confer upon him the well-deserved honour of Master of Engineering.

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Dr. H. S. HOULDSWORTH, who was called to the Bar at Lincoln's Inn in 1926, has been appointed to the rank of King's Counsel. He has taken "silk" almost immediately after qualifying to do so. Dr. Holdsworth, who recently has been extensively engaged in coal arbitrations, graduated B.Sc. at Leeds University in 1911, and obtained the D.Sc. degree in 1925. For seven years he held the position of Research Assistant to Prof. Cobb in Refractory Materials, and an Assistant Lectureship in that subject. During that time he carried out research work on such subjects as the reversible thermal expansion of refractory materials and the transformation of quartz into cristobalite and tridymite.

Obituary

His many friends in the North of England and elsewhere will regret to learn of the death from heart failure of Mr. DANIEL ROBERTSON, of Darlington. Mr. Robertson was taking a few days' rest at Eastbourne after an attack of influenza, and had written home to say that he was much better and looking forward to return when the collapse occurred. A native of Dunoon and afterward resident in Newcastle, Mr. Robertson had been Representative of Messrs. John Wright & Co., Ltd., for 20 years, during which time he moved to Darlington. Subsequently he represented Messrs. Parkinson & Cowan (Gas Meters), Ltd., for 10 years, and finally set up for himself as a gas meter manufacturer.

The establishment at Rise Carr, Darlington, and the personnel of the business are witness to his enterprise and foresight. But Mr. Robertson had many other activities and was well known as a citizen of Darlington. As a man he won the highest regard both in private life and in business by his integrity, his gifts of leadership and sound judgment, touched with quiet humour.

There was a large attendance at the funeral service on Wednesday last representing his varied interests, both business and private, and the coffin was borne by his own workpeople. The tragedy of Mr. Robertson's passing is that he leaves an invalid widow to whose service he was devoted. There is one son, a brilliant scholar at the Darlington Grammar School.

News in Brief

CURRENT EVENTS IN THE GAS INDUSTRY

The Fuel Department of Leeds University held its annual dinner on Tuesday of last week, the guest of the evening being Dr. R. A. Mott, of the University of Sheffield.

A **Very Successful Exhibition** of modern gas appliances was held at Whitby during the week commencing March 8 by the Whitby Gas Company. Cookery demonstrations were given by Mrs. Trainor, M.C.A., and a cake-baking competition attracted many entries.

Practical Cookery Demonstrations were arranged by the Radcliffe and Little Lever Joint Gas Board in the Co-operative Hall, Little Lever (Lancs.), from Monday, March 8, to Saturday, March 13. Dishes were cooked by Miss N. Longworth, Gold Medallist, and demonstrations given by Miss Grinan, of the National Milk Publicity Council.

How to Feed Five on 22s. 6d. a week is the object of demonstrations of well-planned meals which the Gas Light and Coke Company are giving in North and East London. It is not suggested that this sum is really adequate for the proper feeding of such a family, but it has been taken as a basis because it is appreciated that many families can afford no more. The demonstrations, we learn, are attracting great interest.

On Coronation Day Messrs. Ascot Gas Water Heaters, Ltd., North Circular Road, N.W. 10, announce that they are closing their works and that all employees will receive full pay. All employees of the National Benzole Company, Ltd., will also receive one day's holiday with full pay on that day. These Companies' forethought in giving early notification of this intention is much appreciated by their workers, as it is enabling them to make their arrangements for the day well in advance.

Over 1,500 People attended the exhibition organized by the Bridport Gas Company at the Church House from Monday to Friday last week. The cookery lectures given by Miss M. C. Hawkins (Radiation Ltd.) were extremely well attended, and once again the flawless cooking combined with Miss Hawkins' attractive personality won the enthusiasm of each audience. Good business was done in the sale of "New World" cookers, gas fires, and water heating appliances, and many useful enquiries recorded. The week's effort culminated in the ever-popular cake-baking competition. This year there were 42 entries and at the close of the evening demonstration the Manager of the Bridport Gas Company, Mr. W. H. Reed, presented the prizes to the successful competitors.

Further Details of the New Showrooms at Dunfermline (to which we made brief reference last week) have now come to hand. The main façade of the new building will be in stone, the upper storey being set back for floodlighting purposes. The ground floor will house the main showroom and the principal counting houses, with the sales manager's office. On the upper floor will be a demonstration hall, with a fully-equipped kitchen. An annexe to the demonstration hall will be used as an auxiliary store or showroom. An electric lift will communicate between the ground floor and the upper floor which will also be connected with a staircase. The plans for the new building have been prepared by Mr. R. H. Motion, L.R.I.B.A., Dunfermline, in collaboration with Mr. James Campbell, Engineer and Manager.

North British Association of Gas Managers

Spring Meeting at Edinburgh

The Spring Meeting of the North British Association of Gas Managers will be held on Friday, April 9, in the North British Station Hotel, Edinburgh. The Chair will be taken at 10.30 a.m., when the Right Hon. Louis S. Gumley, Lord Provost of the City of Edinburgh, will formally welcome the Association to Edinburgh.

Then will follow the Presidential Address of Mr. James Jamieson, of Edinburgh. After the Meeting, luncheon will be served in the North British Station Hotel at 1 p.m. After luncheon, by invitation of the Edinburgh Corporation, members are invited to visit Granton Gas-Works. 'Buses will leave Waterloo Place for the Works at 3 p.m. Tea will be provided.

From Producer to Town Gas

Successful Ashton Conversion

News of a successful conversion comes from Ashton, where at the Works of Enamellers (Ashton-under-Lyne), Ltd., who specialize in the re-conditioning of black cookers, a furnace of interior dimensions of 12 ft. by 4 ft. 6 in. by 3 ft., working at a temperature of 750° to 800° C., taking seven loads per two hours of various cooker parts for enamelling, was adapted for town gas instead of producer gas.

The waste heat from the enamelling furnace is drawn through an air heater and supplies, with addition of auxiliary gas coke firing, the heat requirements of a battery of four drying ovens each 6 ft. by 6 ft. by 6 ft., and at a later date when, owing to the increasing trade in re-conditioning cookers, a second furnace is installed, it is anticipated that the waste heat will be capable of supplying the total heat requirements of the drying stoves.

The gas consumption is approximately 1 million cu.ft. per month, and Mr. William Bennett, Engineer and Manager of the Ashton Gas Company, to whom we are indebted for these particulars, informs us the installation has given entire satisfaction since its conversion.

Forthcoming Engagements

March.

27.—SCOTTISH WESTERN JUNIORS.—Annual Business Meeting. Paper by Dr. Davidson, "Domestic Coke."

31.—LONDON AND SOUTHERN JUNIORS.—Visit to Davis Gas Stove Company, Ltd., and Electrolux, Ltd., Luton.

April.

1.—MIDLAND JUNIORS.—Meeting at Birmingham. Paper on Gas Water Heaters.

3.—MANCHESTER AND DISTRICT JUNIORS.—Annual Dinner.

3.—SCOTTISH EASTERN JUNIORS.—Visit to Bruce, Peebles, & Co., Ltd., Edinburgh.

8.—S.B.G.I.—Council Meeting, 2.30 p.m.

9.—NORTH BRITISH ASSOCIATION.—Spring Meeting at Edinburgh.

17.—LONDON AND SOUTHERN JUNIORS.—Visit to Watford and St. Albans Gas-Works.

17.—MIDLAND JUNIORS.—Visit to Leamington Spa.

17.—YORKSHIRE JUNIORS.—Meeting at Bradford. Paper by H. Johnston, "Materials and their application to Gas-Works Constructions."

21.—B.C.G.A.—Executive Committee, 11.30 a.m.; General Committee, 2.30 p.m.

21.—I.G.E.—Pipes Committee, 3 p.m.

22.—I.G.E.—Joint Lighting Committee, 2.30 p.m.

23.—I.G.E.—Gasholder Committee, 2.30 p.m.

24.—WALES AND MONMOUTHSHIRE JUNIORS.—Annual General Meeting at Porthcawl.

24.—WESTERN JUNIORS.—Annual General Meeting at Clevedon. Presidential Address by S. B. Jones.

30.—NORTH OF ENGLAND ASSOCIATION.—Annual Meeting at Newcastle.

May.

1.—SCOTTISH JUNIORS.—Joint Visit to Parkinson & Cowan, Ltd.

5.—MANCHESTER AND DISTRICT JUNIORS.—Visit to R. & J. Dempster, Ltd., Manchester. Paper by A. E. Hardman (Widnes), "Atmospheric Pollution."

6.—MIDLAND JUNIORS.—Annual General Meeting.

7.—LONDON AND SOUTHERN JUNIORS.—Annual Business Meeting.

15.—SCOTTISH EASTERN JUNIORS.—Annual General Meeting at Dunfermline.

22.—YORKSHIRE JUNIORS.—Short Paper Meeting at Halifax. Papers by C. Daughtery (Leeds) and J. Castle (Brighouse).

Eastern Counties Gas Engineers' and Managers' Association

Date of Spring Meeting

The Spring Meeting of the Eastern Counties Gas Engineers' and Managers' Association will be held at Aldeburgh, Suffolk, under the Presidency of Mr. C. R. Fowler, of Leiston, on May 20 and 21 next.

The Golf Competition will take place on Thursday evening, May 20.

A Greenhouse in the Showroom

This small lean-to greenhouse was arranged recently in the showroom window of the Stockton-on-Tees Gas Department. The heating pipes were represented by 3-in. Cellactite flue pipes along one side of the greenhouse, and the plants were provided and changed at intervals by one of the local market gardeners. A great deal of interest was created by this display.

Manchester and Yorkshire Juniors

Joint Visit to the Stanton Ironworks Company

One of the most successful Joint Meetings of the Yorkshire Junior Gas Association and the Manchester and District Junior Gas Association was held on Wednesday, March 17, when 140 members of the combined Associations visited the Works of the Stanton Ironworks Company, Ltd.

The centre of interest was the centrifugal casting plant, which is one of the most up-to-date in Europe. The process used is the Mairy (ferro-silican) in combination with the Delavaud system. During the morning the new Nutbrook plant was inspected, and the manufacture of 3 in. pipes was followed with great interest. The plant comprises eight machines, six of which can be operated simultaneously. The most noteworthy feature of the plant, however, is that all the various handling and conveying operations are carried out automatically. This plant alone has a capacity of 35 miles of pipes per week. In the afternoon another centrifugal casting plant was inspected, on which pipes ranging from 4 in. to 21 in. are manufactured. Great interest was shown in the testing of pipes, and a transverse test on a spun pipe gave a deflection of 5½ in. before it was broken. Time did not permit of an inspection of the concrete plant, but from the large stocks of pipes, lamp columns, &c., which were weathering, it was obvious that this Department is an important part of the Company's activities.

The members were entertained at lunch by the Directors of the Company, and Mr. Sarston, Assistant Managing Director, apologized for the absence of Mr. E. J. Fox, the Managing Director. He said that it afforded him great pleasure to welcome the members of the Associations on behalf of the Directors and the officials. It was also a great pleasure to have present Mr. G. Dixon, of Nottingham, and Mr. A. L. Holton, of Manchester. A gathering such as that would result in bringing about even better relations between the supplier and the user. It afforded an opportunity of meeting those with whom the Company had dealt with over a great number of years. He would like to say that he hoped the visit would cement the good relationship that had existed between them for such a long time.

Mr. E. R. B. French, President of the Yorkshire Juniors, proposed a vote of thanks to the Directors, Management, and Staff of the Stanton Company. He said that the meeting was indebted to Mr. Sarston for his presence among them. In going round the Works one realized, to a limited extent, what a huge concern was the Stanton Company. He had been informed that it employed between 14,000 to 15,000. That fact alone made one realize the administration that was necessary to operate successfully such a large concern. The name of the Stanton Ironworks was one that had been linked with the Gas Industry for so many years that their Works were particularly appropriate for the joint visit. Many members had previously had the opportunity of visiting the Works, but there was a progressive spirit throughout the concern which would enable everyone to return greatly impressed by the science and technique that is put into the various operations. The Gas Industry owed a great deal to the manufacturers for the forethought and research work that was carried out to ensure that the finished product was despatched to the various users in the best possible condition and perfectly satisfactory from every point of view. In conclusion he would like to extend a cordial welcome to the members of the Manchester and District Junior Gas Association. It was a particular pleasure to have at the meeting a very old friend of the Yorkshire Association, Mr. R. N. Webb. It was his pleasure to see Mr. Webb inducted as President of the Manchester District Association of Gas Engineers. The Yorkshire Juniors extended to him their hearty congratulations and wished him every success during his year of office.

Mr. T. Caldwell, President of the Manchester and District Association, seconding the vote of thanks, said the members of the Associations had come to the Works to see the pipes manufactured under the most modern and scientific processes. The distribution system represented the arteries of an undertaking—undertakings were as old as their system of mains. In Widnes they had recently cleaned out a main which was at least 60 years old, and it was in as good a condition as the day it was laid. The interest which was maintained by members who had attained greater status than a junior was very encouraging and helped considerably in keeping the Junior Associations in the way they should go.

Mr. P. H. Wilson, General Foundry Manager, said that the vote of thanks was very much appreciated, and in particular the hearty manner with which the members had responded to it.

A Paper was then read by Mr. Wilson on "The Manufacture of Cast-Iron Pipes."

United Kingdom Gas Corporation, Ltd.

Ordinary and Second Preference Dividends

The Directors of the United Kingdom Gas Corporation, Ltd., are recommending a final dividend of 3%, less tax, on the Ordinary Shares, making 5% for the year ended Dec. 31, 1936, and 4½% per annum for the six months ended Dec. 31, 1936, on the 4½% Second Non-Cumulative Preference Shares. Both dividends are payable on April 17.

Serious Coal Shortage at Edinburgh

Protest to Minister of Mines

The Edinburgh Corporation has protested to the Minister of Mines against the shortage of coal for public utilities.

At a Corporation meeting last week Councillor Airlie, Convener of the Electricity Committee, said his Department could only obtain two-thirds of their coal requirements and the Gas Department one-third. Mr. J. Jamieson, Gas Engineer and Manager, said there were occasions when they had barely 300 tons on hand to meet their daily needs of 900 tons. The shortages during the winter totalled 12,000 tons and had been as high as 20,000 tons. It was with difficulty they maintained the quantity and quality, and if the position continued they might have to review their production methods.

Councillor Walter Muter, criticizing the Government for their failure to keep a promise to bring in legislation affecting coal supplies and prices for public utilities, said that the shortage had forced them to cease benzole production. If Government did not forbid it, they had the alternative of importing coal from the Continent.

Attractive Window Displays from Coventry

Our photographs show two typical showroom window displays recently arranged by the City of Coventry Gas Department. Mr. P. N. Langford, the General Manager, speaks highly of the success of the Department's Cookery Demonstrations in connection with which Cake-Baking Competitions are organized. In addition to prizes, successful entrants are presented with a certificate which in itself constitutes a permanent advertisement for gas. Notwithstanding the intensive campaign which during the past four years has resulted in the fixing of over 35,000 enamelled gas cookers, the Department's sales of cookers during the last month show an increase of 56% as compared with February, 1936.

Heating a Sea Water Swimming Pool

Gas to be Used at Morecambe

The Morecambe and Heysham Town Council have adopted a recommendation by the former Engineer and Manager, Mr. T. W. Barratt, A.M.I.C.E., for the heating of the town's Super Swimming Stadium by gas. The Stadium swimming bath contains 1,250,000 gallons of sea water in the open air, and though it may not be the largest swimming bath in the country, it is claimed to be the largest to be heated by gas.

The gas plant at the Stadium consists of a "Cochran-Kirke" boiler for the laundry and two low-pressure boilers for central heating. A large unit of the same type is to be used for heating the water in the swimming bath. The consumption of gas is expected to be from five to ten million cu.ft. per annum, according to the weather conditions.

Aspects of Precision Photometry

Illuminating Engineering Society Lecture

A very successful meeting of the Photometric Section of the Illuminating Engineering Society was held on Feb. 22, when members of the Illuminating Engineering Society were the guests of the General Electric Company's Research Laboratories at Wembley. The President, Mr. A. Cunnington, in his opening remarks, expressed thanks for the hospitality of the Laboratories, and a welcome was briefly extended by the Director, Mr. C. G. Paterson.

An instructive lecture was then given by Mr. G. T. Winch on "Some Practical Aspects of Precision Photometry," which was illustrated by a number of effective experiments. The author showed, by the aid of a spot light travelling on a large size scale visible to all the audience, how slight changes in the adjustment of the photometric bench might give rise to quite appreciable errors. One factor studied was the effect of screens to prevent stray light affecting the photometer. This led afterwards to a discussion on whether the walls of photometry rooms need necessarily be blackened. It was also shown how blocking even part of the glass bulb of an electric lamp might diminish the candle power owing to reflected images of the filament, even though the filament itself was unscreened. Other topics considered were the effect of imperfect screening of the photometer head and photo cell, the effect of the size of the source of light studied, the limitations of photometric integrators and cubes, the comparative advantage of equality of vision and flicker photometers for comparing sources of light differing in colour, and the possible source of errors in direct reading physical photometers using photo-cells. The lecture was followed by a keen discussion, which was opened by Dr. J. W. T. Walsh.

Previous to the meeting, visitors had had an opportunity of inspecting the Photometric Laboratories of the General Electric Company.

Council Nominations for 1937-38.

The following nominations for Officers and Members of Council of the Illuminating Engineering Society, for the Session, October, 1937, to October, 1938, have been made, and are being circulated to members of the Society.

President.—Dr. S. English.

Vice-Presidents.—Mr. F. C. Smith and Mr. W. J. Jones.

Hon. Secretary.—Mr. J. S. Dow.

Hon. Treasurer.—Mr. E. Stroud.

Members of Council.—Mr. A. M. Bell, Mr. B. F. W. Besemer, Mr. H. Bright, Mr. J. S. Preston, Mr. G. H. Wilson, Mr. J. F. Colquhoun, Colonel C. H. Silvester Evans, Mr. C. A. Masterman, and Mr. L. M. Tye.

Association of Tar Distillers

Annual Dinner

This event, which annually serves to bring together varying interests from all parts of the country under very happy auspices, was held on Tuesday, March 16, at the Savoy Hotel, W.C. 2. Major A. G. Saunders was in the chair, at the conclusion of a successful and highly popular year as President, and he replied to the toast of the Association given by the guest of honour, the Earl of Dudley. The health of the guests was proposed by the Vice-President, Mr. H. E. G. West, and Sir Reginald G. Clarry replied. Representatives of the Gas Industry were numerous, among the guests of the Association being Colonel W. Moncrieff Carr, O.B.E., T.D., immediate Past President of The Institution of Gas Engineers.

South Shields Corporation Oppose Merger

Objection to be Lodged with Board of Trade

The South Shields Town Council at a special meeting on Monday night, March 15, decided to oppose the proposed merger of the South Shields Gas Company and the Newcastle-upon-Tyne and Gateshead Gas Company, which has already been approved by the shareholders of both concerns.

The Council is acting in conjunction with the Jarrow Town Council and the Hebburn and Boldon Urban Councils. The Town Clerk of South Shields was instructed to lodge with the Board of Trade before March 27 an objection to the merger. It was decided that in conjunction with the other objecting local authorities all steps necessary to oppose the scheme and to share the costs of the opposition should be taken.

Women's Gas Council

Demonstrators' Circle Meets

In the pleasant surroundings of the Members' room of the Women's Gas Council at Gas Industry House, Mrs. M. Tew, M.I.H., M.I.D., of Electrolux, Ltd., gave on Monday, March 15, a most informative and lively talk on "Refrigeration" to the London and Home Counties Demonstrators' Circle.

With ten years of experience of her subject behind her, Mrs. Tew, fresh from a highly successful week with the Bristol Gas Company, thought that even the selling staff inside the Industry were more aware of the disadvantages than of the advantages of refrigeration. Apart from the importance of finding a satisfactory answer for every query that arose in connection with the demonstration, she urged a determined campaign to press home the fact that the refrigerator is not merely intended for keeping food cold, but for retarding the growth of bacteria. In England, judging from what she had seen at times, people hardly seemed to care what they ate; but statistics relating to the amount of perishable food imported and the rate of decomposition would soon make them alive to the importance of safeguarding the household. Running a home, Mrs. Tew said, requires more intelligence than any job in the world.

The talk included hints on how to draw crowds by means of snappier invitations, introduction of child psychology, slimming, &c., and was followed by questions from the demonstrators present.

Glasgow Rejects Coke Oven Scheme

Gas Committee's Recommendation Ignored

The Glasgow Corporation on March 18 rejected a proposal to open up negotiations with Messrs. James Nimmo & Co., Ltd., for a new contract for the purchase of purified coke oven gas. The Gas Committee had previously recommended opening negotiations, the suggested price being 6d. per 1,000 cu.ft.

Bailie E. M. Dalglish (Progressive), moving that negotiations be opened, said the Glasgow Municipal Gas Department had lost £32,000 last year. Every month that passed after the lapsing of the contract with Messrs. Nimmo cost the Corporation £2,000.

Bailie Victor D. Warren (Progressive) said it had been stated that the adoption of this proposal would throw certain Corporation workers out of employment. Official returns showed that 3,000 persons had been given temporary employment with the Corporation since 1932. If the Corporation had taken all the gas that Messrs. Nimmo, Dixon, and Baird could have supplied from 1932 to 1937 not one man in municipal employment would have lost his job.

Councillor J. D. Kelly (Progressive) said the proposal would benefit the Corporation and also the iron and steel establishments in the distressed areas of Lanarkshire.

Councillor Joseph Taylor (I.L.P.) moved that no action be taken, and in seconding his proposal, Councillor Joseph Payne (I.L.P.) said it was not for the Corporation to subsidize private enterprise. Municipal ownership and control alone fitted the bill.

Treasurer P. J. Dollan (Socialist) said the problem could not be solved by piecemeal agreements but by a comprehensive scheme. The West of Scotland should be surveyed and co-ordinated as a whole in a scheme to ensure fair play for every local authority. If the proposal were adopted Glasgow must close down 50% of its gas plant without any compensation. Coatbridge was to continue to produce gas while Glasgow was to buy gas from the Coatbridge area. The responsibility of displacing labour was to be borne by Glasgow alone.

The Town Council adjourned before reaching the item on the agenda dealing with a remit to a sub-committee of a letter from Messrs. William Dixon, Ltd., Govan Iron Works, Glasgow, asking for an opportunity to discuss the question of coke oven gas with Corporation representatives.

Alva Absorbed by Alloa

Bulk Supply Inaugurated

The Alloa Town Council formally took over the Alva Gas Undertaking on March 18. We have already referred to this amalgamation in our issues for June 17 and 24, 1936. Before a representative audience assembled at Alva Gas-Works, Provost J. P. Younger, Alloa, shut off the Alva gas, while Provost W. Maltman, Alva, turned on the Alloa gas. In this way the change-over of control of gas supplies to the burgh of Alva was carried through.

A cake and wine banquet followed, at which Provost Maltman, Provost Younger, Bailie D. M'Kinlay, Alloa, and Mr. J. W. Napier, Alloa, spoke.

In the course of his remarks, Mr. Napier mentioned that Dollar was now the only district in the county which did not get its supply of gas from Alloa.

Lancashire Dynamo and Crypto

Record Output: Plant Extensions

The thirty-eighth ordinary general meeting of Lancashire Dynamo and Crypto, Ltd., was held on March 18 in Manchester.

Mr. H. W. Bosworth, A.M.I.E.E. (Managing Director), presided in the absence of Mr. A. E. L. Chorlton, C.B.E., M.P., M.I.E.E., M.I.Mech.E., the Chairman, and read his speech, in which he stated that the accounts showed a great improvement even on those submitted last year. Every section of the company had been fully occupied during the year, and a record output, at any rate for peace time, had been obtained, both in number of machines, tonnage, and money value. The Directors were satisfied that additional capital could be advantageously used in the business, and it was therefore proposed to issue a further 80,000 shares on terms which had already been announced. The Board recommended a final dividend of 15%, making 20% for the year.

Progress in a Depressed Area

Large Industrial Contract for Neath

Extensions at the Municipal Gas-Works at Neath have been necessitated by recent advances in industrial gas sales, the latest contract concluded being between the Corporation Gas Department and the Metal Box Company, Ltd., for a gas supply to their new factory at Neath.

We are informed by Mr. W. Clark Jackson, M.I.Mech.E., Engineer and Manager of the Gas Department, that the period of the contract is for ten years from July 1 next. The amount of gas covered by the contract is 140 million cu.ft. per annum. The consumption demand is expected to reach 70 million cu.ft. by the end of the first year, and will with extensions to the factory, reach the full rate of 140 million cu.ft. per annum by the end of the second year. The benefit of the contract to the Department, however, does not end with the amount stipulated in the agreement because the factory is expected to give regular employment to between 300 to 400 persons, and so the Department will automatically benefit from increased domestic sales.

As far as can be seen at the present moment the Gas Department's sales of gas this year are likely to reach 240 million cu.ft., as compared with 213 million cu.ft. in 1932, and 186 million cu.ft. in 1928, and although Neath has been somewhat more fortunate than certain other districts in South Wales, it has experienced quite a substantial amount of depression, as the tinplate industry for many years has only been working 60% of its output, and a whole group, consisting of four collieries within the area of supply, were closed down permanently in 1926.

PREVENTION OF SURFACE DAMAGE TO METALS

by

Furnace Atmosphere Control

F. n an Address given by Dr. J. L. Robinson, of the Sheffield Gas Company's Research Department, before the Sheffield Trades Technical Societies.

Fig. 1.—Large Muffle Furnace for Heating Composite Steel Slabs to 1,300° C. without Scale Formation. The Muffle is Purged with the Sheffield Gas Company's Patent Controlled Atmosphere.

Some four years ago the Research Department of the Sheffield Gas Company evolved a process of atmosphere control for particular application to high speed steel hardening furnaces. It will be appreciated that in the temperature range normally used for high speed steels—namely, 1,250°-1,380° C., oxidation and decarburization are particularly severe in open-fired furnaces, and in particular the delicate edges of cutting tools are liable to severe damage due to localized overheating.

The process evolved makes use of a complete muffle, thus eliminating the possibility of flame contact and ensuring uniform heating. The atmosphere with which the muffle is purged has as its basis the waste products of combustion from the heating chamber which, by the use of special burner equipment, are guaranteed to be free from excess air or excess gas at all times. Such products of complete combustion consist only of nitrogen, carbon dioxide, and steam, and while the nitrogen is inactive, the steam is a powerful oxidizing agent, which fortunately can be removed by simple physical means. This is done by sealing the hot waste gases, usually in a water cooler, to the lowest possible temperature, whereby the major part of the steam is condensed and removed from the mixture, which, however, still contains the oxidizing gas carbon dioxide. This cannot be removed by physical means, so it is made to react chemically with the constituents of unburned coal gas, whereby a large proportion of carbon monoxide is formed. This introduces hydrogen at the same time, but by careful proportioning of cooled waste gases and unburned gas this is kept below the percentage at which decarburization could occur. By use of this atmosphere high speed steel tools can be heat-treated without decarburization and with a minimum of oxidation.

More recently this process has been applied to larger furnaces, and for this purpose separate units for producing the required atmosphere have been designed. (Figs. 1 and 2.) These consist of a small combustion chamber working at a fixed rate, followed by a suitable water cooler; the cooled products of combustion are reheated in a suitable heat exchanger and then distributed to the furnace under pressure from a fan. Means are usually provided whereby the flow of gases is automatically increased when the door is opened, thereby checking the inrush of cold air to the working chamber. Units such as these are particularly useful when the atmosphere control process is applied to annealing, because it is frequently necessary to provide a flow of purging gases during the cooling period, when the heat treatment furnace is shut off. For use at comparatively low temperatures it is advisable to preheat the mixture to the temperatures of the heat treatment furnace in a separate heating chamber, the heat being supplied mainly by the waste gases from the heat treatment furnace. By subjecting the mixture to this preheating, equilibrium is attained in the atmosphere before it comes in contact with the material undergoing treatment.

Another method which has been used for producing atmospheres for heat-treating steels without oxidation and decarburization is the partial combustion of coal gas and subsequent treatment of the products of combustion.

In this process, coal gas is mixed with the desired volume of air, which is considerably less than that required for complete combustion, and the mixture is burned in a refractory lined chamber. It is worthy of note that such mixtures of gas and air are approaching the upper limits of inflammability, and combustion can only be maintained in a chamber which is already at a high temperature. One variation of this process employs a catalyst in the combustion chamber to ensure that all oxygen is combined and that gaseous equilibrium is attained in the resultant mixture.

The mixture so produced is then cooled to remove as much as possible of the water vapour and for certain processes may be used without further treatment. For precise work it is essential to proceed further with the removal of water vapour down to the lowest possible limits. This is done by some physical drying agent such as silica gel or activated alumina, which can readily be regenerated and used again. Special units are marketed which are arranged so that one part is used for drying the gas while the other is being regenerated, the change-over is usually made automatically. These units, of course, add considerably to the capital cost of the plant and also to the running costs, but are cheaper than chemical methods.

If the process is such that the above method of preparation does not give the required atmosphere, then a modification has to be made by increasing the gas/air ratio beyond the limits of inflammability. This involves the use of an externally heated reaction chamber and increases the cost of manufacture still further, the subsequent treatment of the reaction products being the same as that described. It must be realized that none of the methods described yields an atmosphere capable of universal application to all heat treatments of steels. Each heat treatment and each steel must be examined separately and the necessary adjustments made to the method selected. The approximate atmosphere can usually be determined from theoretical considerations, but the final adjustments can only be made by the time-honoured method of trial and error.

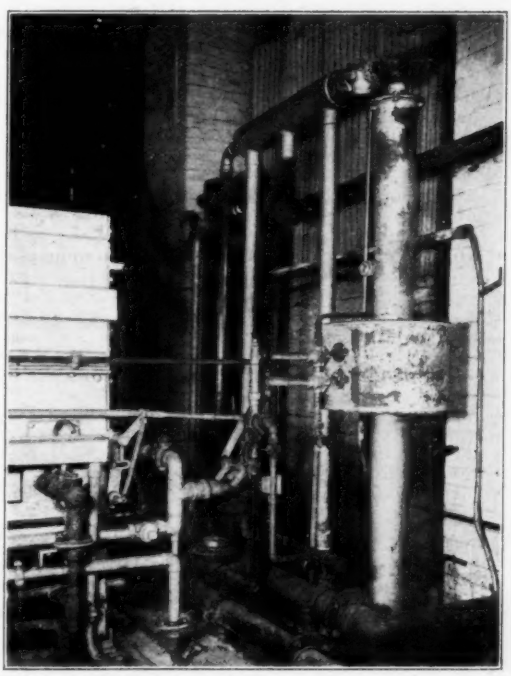


Fig. 2.—Separate Unit Supplying the Controlled Atmosphere to the Furnace in Fig. 1.

An All-Gas Contribution to the New London

Kensal House

Reference was made in last week's "JOURNAL" to the official opening by the Minister of Health of Kensal House—two blocks of flats erected by the Gas Light and Coke Company on a site adjoining their Kensal Green Works as a contribution to London's rehousing problem. We give this week an illustrated description of the premises which indicates how important a part gas and coke can play—given a fair opportunity—in providing all the essential domestic services in an economical, clean, and trouble-free manner.

A Glimpse Between the Two Blocks, Showing Footbridge to Street.

The Gas Industry has for some time been convinced that a complete modern automatic fuel service in low-rented flats not only offers obvious advantages to the tenants, but, properly planned and installed, presents no economic difficulties either to the tenants or to the authorities who build their dwellings. To carry that conviction to other minds has been one of the major tasks of the Industry in recent years. The efforts of salesmen, showroom staffs, and technicians have been winning their way against the not unnatural hesitations of many housing authorities. The time arrived, however, to clinch the argument by proof—by a living demonstration in a modern housing block in actual occupation as part of a self-contained estate.

That was the reason why the Gas Light and Coke Company decided on the enterprise which took final shape as Kensal House.

The fuel programme which it was desired to demonstrate in action is as follows:

(1) A constant supply of hot water is essential at sink, copper, and bath. Back-range boilers mean fires and fire-lighting, summer and winter alike. Central hot water installations add 2s. a week (or more) to the rent—which the thrifty and the wasteful alike have to pay. The correct solution is a small instantaneous water heater in each flat, serving both kitchen and bath.

(2) Raw coal for cooking dirties the skies and the kitchen; and it is laborious. The common plan of a coal range in the living room and gas in the scullery means cooking in two places. Proper planning will save money and work, and set family life free from the sight and smell of cooking, by putting a modern automatic cooker in the kitchen, and making separate provision for heating the living room.

(3) To heat the living room a coke fire, ignited by gas, is the only known method that combines cleanliness, low cost, and ease of handling. There is no need to light it until the morning's work is done.

(4) There should be provision for occasional heating in bedrooms.

The decision to exhibit this programme in practical day-to-day operation necessarily meant the construction of a block of dwellings typical of serious practical re-housing effort. The demonstration must be thorough, or it could not be effective. The area selected was Kensal Rise, one of the worst slum districts in London, crying out for better housing. When the enterprise was known it obtained the whole-hearted co-operation of the Kensington Borough Council and the Ministry of Health. Then the Company took one more important decision. The estate it built would be not merely a practical specimen of low-cost housing construction, but would represent the best that the builders could command in the way of up-to-date planning and design. That is to say, in offering the solution of that problem which is its own direct concern, the Gas Light and Coke Company felt that it might properly see what could be done to offer possible solutions to some other aspects of the problem of rehousing.

Six distinguished leaders in the field of housing design were called into consultation, the executant architect being E. Maxwell Fry. They were encouraged to design an ideal estate as they saw it. The view they took was that the working-class family has needs other than food and shelter—social and communal needs. So plans were drawn for a unique urban village, complete with nursery school and tenants' clubs. The Company accepted this recommendation as in line with the pioneering spirit of the whole enterprise, and as offering further opportunity to demonstrate the application of gas to social needs.

Now that the estate is complete, its sponsors are justified in hoping that it will not only prove the case in a practical and economical way for a full gas equipment but may contain other features which will assist, or at the least will seriously interest, other constructive workers in the same field.

Kensal House was built in strict conformity with the terms of the Housing Acts, as to permitted

A typical kitchen and living-room at Kensal House, showing gas and coke apparatus.

areas, financial arrangements, and choice of tenants, who were nominated by the Kensington Borough Council from its slum clearance areas. Thus Kensal House qualified for subsidy and is in all respects comparable economically with other publicly operated housing schemes. Rents have been fixed at a level adequate to cover cost, including the return upon capital borrowed. The Capitol Housing Association, Ltd., was formed as the instrument for carrying out the whole enterprise.

The site selected (at the junction of Ladbroke Grove with the Great Western Railway) is a roughly triangular estate of 1½ acres belonging to the Gas Light and Coke Company, formerly part of the Kensal Green Gas-Works, the ground rising sharply from south to north, the area being bounded on the south by the Great Western Railway.

There are 68 flats, 54 with three bedrooms and 14 with two bedrooms, built on a wide curve in two blocks running north and south so as to permit morning sun to reach bedrooms facing east, and afternoon sun to reach living rooms facing west.

The footbridge from the first floor flats to the street level adds a dramatic touch to the House, while it enables prams to be wheeled straight out without weary stair-climbing. The terrace and the two lawns for the grown-ups are between the two blocks of houses (after the manner of a college quadrangle) well away from the noise of the children's games. There is also a roof garden. Facing south is the Nursery School, built in a semi-circle following the line of the gasholder site, and facing south and west is a circular playground for older children, the actual site of the former gasholder.

The flats were planned on labour-saving lines, for families of five or more persons, at rentals of 9s. 6d. and 11s. 6d. a week, including rates. Each flat has a living room, two or three bedrooms, a kitchen, a bathroom, a large family balcony, and a small specially ventilated balcony for drying clothes; on the street level there is allotted to each flat a lock-up large enough to hold a pram and a bicycle. Linoleum is laid throughout. Each flat has been wired for a loudspeaker, reception being arranged centrally, each tenant having available a choice of programme.

Gas and Coke Equipment.

An open coke fire, ignited by gas, has been fitted in each living room. A panel gas-fire has been installed in the principal bedroom, together with a gas point in each of the smaller bedrooms. An "Ascot" water-heater, fixed on the partition wall between kitchen and bathroom, provides hot water instantaneously to sink, copper, and bath. A gas cooker in mottled grey enamel with modern hotplate and automatic oven-control has been installed in every kitchen. A movable wash copper, tucked away for six days a week under a detachable draining board, stands in each kitchen; a point is provided for a gas iron. Lighting is by gas, switch-controlled, with simple modern fittings.

In planning the flats all unnecessary passage space has been eliminated to enable the living room to be as large as possible.

All window-sills are faced with small quarry-tiles which polish well, and there is a strong window-seat. The hall and living room are painted to 3 ft. 6 in. height (so that children's finger-marks can be wiped off), and distempered above this height. Bedrooms are distempered. Kitchens and bathrooms are painted throughout. All paint and distemper are in light hues. Tiles are built in behind the bath and round the sink.

Two features worth noting are the window-boxes (holding 2 ft. of earth and well drained) built in the concrete of the balconies, and the brightening of the common staircases by the use of cement paint in charming yet durable pastel colours.

The Nursery School.

In the foreground is the site of the former gasholder, now levelled and equipped as a playground for the older children. It has goal-posts and netball apparatus, and lends itself to all manner of games. There were several trees already on the estate, but additional ones have been planted, lawns made, and pleasant gardens laid out.

Social Amenities.

Some of the major problems of the low-income family are not solved even by adequate housing. Certain social amenities are badly needed, and in the opinion of many experts the way to provide these is in close association with the residential scheme. At Kensal House each section of the small community (some 380 people) has its own particular social requirements. The Nursery School and the various recreation rooms have been designed to meet those several needs.

In Britain at the present time no official responsibility is undertaken for children between the ages of two and five. Too young for school, they are liable to be neglected in the home through the advent of still younger children. Even where the home is good, help is needed in daily life as much or even more than in families with higher in-

A view of the rear block of flats, showing in the foreground the site of the old gasholder now used as a children's playground.

comes. The new baby must be cared for. Cleaning, shopping, cooking, and mending must be done. Often the mother must go out to work to supplement the family income. It is an unmixed blessing for a mother to be able to send her toddlers to a school where she knows they will be happy, well fed and well looked after, and where in addition she and her husband will be encouraged to discuss and collaborate in the educational plan.

For these reasons its advisers recommended and the Company agreed to include, a Nursery School in the estate, for 60 children, run in collaboration with the Board of Education and the London County Council. Priority is given to the children of tenants, vacancies being filled from the overcrowded and badly housed families in the immediate neighbourhood.

The Kensal House school incorporates the most successful features of up-to-date English and Continental kindergarten research.

The Nurseries are lighted and heated by gas throughout, the corridors centrally, the classrooms by overhead gas panels.

The school laundry is equipped with a washing machine and drying cabinet on the premises, to launder the children's overalls and linen. There is a special kitchen equipped with the latest type of cooker to prepare meals.

There is a doctor's clinic and observation room prepared for regular medical inspection. An L.C.C. nurse comes daily to attend to minor ailments and advise mothers.

The Nursery School has been an instant success both with the mothers and the children. From the day it opened with its first batch of 10 children, more have arrived each morning and the complement of 60 children is already in sight.

From Five to Fourteen.

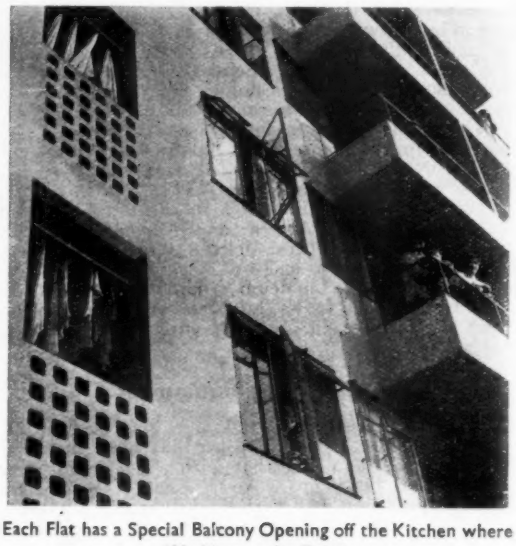
There are no fewer than 130 children between these ages in Kensal House. Their needs have been specially considered from two vital angles—first, an excellent outdoor play-ground, to which we have already referred; and, secondly, indoor occupations will soon be flourishing in a part of the big clubrooms, with the active help of parents.

A special clubroom is available for the use of the adolescent community. Music, plenty of space, and a good floor for dancing are available, and the young people will be encouraged to make their own equipment and develop their own groups and societies for sport and study. This room is heated by overhead panels.

One of the most important features of Kensal House is its social clubrooms, intended primarily for the use of the adult tenants. A large room with stage and snack-bar, smaller rooms simply equipped for making and mending furniture, boot repairing and sewing, will, it is hoped, give full scope for a free social life. Simple washable furnishings in bright red and blue patterns, red-checked oilcloth on the large tables and bright blue benches lend pleasant touches to these rooms.

The Social Clubs for tenants, their wives and children of all ages will be conducted under the supervision of the Feathers Club. This well-known body has done admirable work in the organization of non-residential social centres in the poorer districts of London. The existence of tenants' clubs with proper premises in a housing estate is itself a novelty, and the management of such a club is therefore necessarily a new venture of the "Feathers," but great hopes are entertained of the experiment.

A resident caretaker looks after general tidiness and cleanliness; rents are collected weekly by an accounting clerk. But the main responsibility for the order and good atmosphere of the estate inevitably rests upon the tenants themselves. An Executive Committee has been elected on the basis of two representatives for each of the seven staircases—under the chairmanship of Miss Denby, with the Club Secretary as Hon. Secretary. This Committee considers such problems as the general co-ordination of the various activities and the formation of new ones, the prevention of noise, the preservation of trees, flowers, grass, and other perishable amenities.



Each Flat has a Special Balcony Opening off the Kitchen where Washing can be Dried.

Reconstructing an 1877 Holder At the Neath Gas-Works

by D. W. REES (Assistant Engineer, Neath Corporation Gas Department)

From a Paper read before members of the Wales and Monmouthshire Junior Gas Association at a meeting held at Neath on Jan. 23.

In the early part of 1935 it was decided that the No. 1 two-lift holder at the Neath Works was in need of repair, more particularly in the matter of the crown sheets. Patching of these sheets had been carried out from time to time, but it was thought that the holder generally was getting too near the danger line and that therefore a thorough repair should be carried out.

The column-guided holder has a capacity of 265,000 cu.ft. capacity, the columns being braced by lattice girders. These were extensively used in the latter part of the last century. It was decided to replace these lattice girders with rolled steel joists, thereby considerably strengthening the framing and also ensuring less liability to corrosion.

Several of the cast iron finials which capped the columns had corroded at the base, and it was also decided to replace these. The entablature boxes which encased the ends of the top lattice girders had suffered erosion, and it was thought exceedingly dangerous to let these remain, fearing a finial might become so dislodged as to come completely away and fall perhaps on the crown, with disastrous results.

The holder was let down on June 2, 1936. Dismantling was started the following day, when the crown was attacked with ripping hammers. This work was carried out by four men, who were employed by Messrs. Willey & Co., Ltd., Exeter. The crown sheets, which were about 14 gauge, were cut with the ripping hammers into sections of approximately 8 ft. by 10 ft., which were fairly easy to handle, and pulled off the framing of the holder. It was here after the first section of the sheeting had been removed that our worst fears were realized. After stripping-off the crown sheets it was seen that three of the ten principals running from the outer curb to the king post had given way in the centre, and the web of the T iron member had fractured to such an extent that it had allowed a sag to take place of nearly 4 ft. from its original position.

The cause of this collapse was due to the 1¼ in. tie rods used for bracing the principals having sheared at their welds. Several of these tie rods were found to have sheared off in more than one place; and the T iron member of the principal, being incapable of supporting itself over the length of span, gave way at the weakest portion—namely, where the two sections were joined together. The extent of this collapse was very disconcerting, and, rather than risk any further trouble of a similar character by simply repairing to the original design, it was decided

to dismantle the whole crown framing and to rebuild to a much stronger design.

Before dismantling operations were commenced it was necessary to decide whether re-conditioning of the framing should be done at our works, a local engineering works, or sent away to the contractors' yard.

Prices having been obtained, the framing was delivered to Messrs. Dawnay & Sons, for re-conditioning.

The original principals were of ordinary design, being simple roof truss, with two king posts and 1¼ in. tie rods. The new design incorporated the use of angle irons, placed back to back and bolted to a large gusset plate, this latter being riveted to the web of the T iron. Undoubtedly this was a very much stronger design than the original.

The fractures in the tie rods had all taken place at the welds, probably by poor welding originally, by crystallization, or by bad adjustment of the tension rods in the first instance. During the time the framing was being re-conditioned the erectors were busy riveting sections of the sheets ready for re-crowning.

The ⅜ in. centre plate was put up on trestles and the inner ring of 10 gauge sheets riveted to it prior to putting into position on the holder.

Method of Riveting.

The centre plate was placed into position and given a heavy coat of red lead paint around its riveting edge, about 1½ in. to 2 in. wide. A 2 in. tape was then placed over the holes around the edge of the plate, and the inner ring of 10 gauge sheets placed, with the aid of podgers, into position. Three or four holes were then taken up and riveted with ⅝ in. cup-head rivets. This was carried on with the next plate, and so on until the inner ring was completed.

Riveting around the centre was then commenced, starting from the centre of the plate and working towards the seams. When within two rivets of the seam, the edge of plate which had been previously set to take the next plate was hammered down hard, a rivet inserted to take up the three plates, and the seam completed by alternate rivets on either side of this first corner rivet.

After the centre ring had been completed the other sections of intermediate rings of 12 gauge sheet were rivet tacked at intervals of about 1 ft., in sections of three, preparatory to placing in position on the holder. This work was done to expedite the sheeting of the crown during the time the crown framing was being rebuilt.

Having got the sheets in suitable sections for moving into position the erectors then left this work and turned their attention to the work of removing the lattice girders and the finials surmounting the columns.

By the time the work to the frame of the holder had been completed the crown framing had been re-conditioned and was at the works ready to be assembled.

Reassembly of Umbrella Framing.

The principal members were put into position with the aid of winches and snatch blocks, this work occupying little more than a couple of days. It was now necessary to fix the intermediate or secondary bars into position; this work also did not occupy a great deal of time, as the original intermediate bars were re-used. This framing was then again given a coat of good quality red lead paint and was ready to be properly adjusted into position. The adjustment was done by the main tension rods which ran from the outer rim to the bottom of the king post, the correct adjustment being determined by the position of the outer curb relative to the surrounding holder well.

The other repair to the holder having been completed, the next work to be carried out was the re-sheeting of the crown. The crown sheets were previously rivet tacked into suitable sections prior to placing into position on the crown framing.

Re-sheeting was commenced from the centre of the crown, and the work continued outwards. First of all the centre ring of ⅜ in. plate with its inner ring of 10 thickness gauge plates riveted to it was placed into position, and the intermediate rings of 12 gauge sheets were riveted in a similar manner, with red lead and tape seams and ⅝ in. cold rivets. This made up the crown as far as the outer ring.

The building-up of the outer ring was rather different, as this ring supported the guide rollers running on the ten columns. It was therefore necessary to lay down ten ⅜ in. plates in position, and to bed down the roller carriages to them. After this had been done, the remaining plates were assembled, and riveting proceeded in the usual way, with the exception of the riveting of the plates to the curb itself.

In the riveting of the outer ring of plate to the curb it was necessary to use hot rivets, which are of ⅝ in. diameter, red lead and tape being used as before.

Roller Carriages.

The top carriages had been sent back to Willey & Co. for re-boring and fitting with bushes and new spindles, as these had worn rather badly. It was also found necessary to modify the dip carriages, as these in some places were not making contact with the column guides. The top carriages were adjusted to their correct position relative to the guide rails, little trouble being experienced, as there was ample allowance of room for adjustment. In the case of the lower, or dip, carriages, however, as I have mentioned earlier, the design had been modified as the original margin of adjustment was not sufficient to allow of a correct setting of roller to guide rail. The lower or dip carriages were then attached, using red lead as the jointing material, and adjusted to their correct positions.

The only matter to be put right now was to change the one broken cast iron bracket holding the guide rail to the particular column, and as the guide rail was in two parts, one part from ground level to the lower girders and one part to the top, it was an easy matter to allow for the rail to be taken away from the column and to slip the bracket into position.

The holder was then ready to be put back into commission. It is to the credit of the contractors that the holder showed a perfect upward and downward travel.

Testing of Crown.

The next step was that of testing the crown sheet joints for leakage.

This work was carried out carefully, and it was found that only in about four places was it necessary to stop any leaks. These were easily rectified by a little caulking or hammering on the edge of the plate, giving the effect of beading down.

The holder was then painted with Dixon's battleship grey graphite paint, and the work of reconstruction had been completed.

Gasholders are very often taken for granted—a rather dangerous assumption, as has been proved during recent years. It behoves young engineers to see that this type of plant gets equal attention and supervision to that generally given to retort plant and moving machinery.

This is our practice at Neath, where a weekly inspection is made and a log book kept showing all the information, together with periods of oiling, adjustments, &c.

Discussion.

Mr. E. M. Edwards (Port Talbot) said he was interested to notice the very few leakages that needed attention after the testing of the crown sheets. Was there any special reason for this? The holder had been working with an oil film over the water inside the holder for several years. To what extent was the oil film found to have remained on the surface of the water?

Mr. Rees said the reason for the small number of leaks was the careful supervision on the part of the Neath Gas Department's staff, together with the conscientious work of the riveters. Regarding the oil film, Mr. Rees explained that there was still quite a good film of oil on the surface of the water. Though not quite as much as had been admitted initially, the film was thick enough not to expose any part of the water on the surface.

Mr. Stuart Johns (Swansea) asked what was the condition of the inner side sheets—whether the oil film had proved of benefit in preventing internal corrosion of the sheets?

Mr. Rees replied that the condition of the side sheets which had operated in the film of oil was excellent, no corrosion had taken place, and in all places on these sheets a protecting film of oil was apparent. A great difference was seen on the top two ring sheets which had been above the water level, and where rust was much in evidence, proving that the oil film formed a protection for the sheets.

Mr. H. Maycock (Abertillery) said he was a great believer in oil filming, even where no gas drying plant was in use. Oil filming was not only of advantage in preventing internal corrosion, but also assisted, more particularly in warm weather, in keeping down the dewpoint of the gas. He would like to know the amount of oil required to re-film the holder.

Mr. Rees replied that the amount of oil required to re-film the holder was approximately 400 gallons.

Mr. A. D. Howells (Abergavenny) explained that he had recently carried out reconstructions at the Abergavenny Works, and had difficulty in getting rid of the holder tank water. Would Mr. Rees inform them if he experienced any difficulty in that matter in Neath, and also would he tell them if the riveting was done by machine or by hand?

Mr. Rees informed Mr. Howells that no difficulty had been experienced at Neath as they were able to pump the holder tank water into the river, although this water was first filtered in a breeze bed. Regarding the riveting, this was all done by hand hammers.

Mr. West (Port Talbot) asked the Author whether there had been any appreciable increase in pressure thrown by the holder.

Mr. Rees said that, due to the increase in weight in the interior ironwork and heavier crown sheets, the pressure was increased by 5/10ths, from 53/10ths to 58/10ths.

THE PRESIDENT.

The Southern Association of Gas Engineers and Managers

General Meeting in London

The General Meeting of the Southern Association of Gas Engineers and Managers was held at the Hotel Victoria, Northumberland Avenue, London, W.C. 2, on Tuesday, March 16, under the Presidency of Mr. S. E. WHITEHEAD, B.Sc., M.I.Mech.E., Director, Engineer, and General Manager of the Southampton Gaslight and Coke Company.

THE ASSOCIATION'S LUNCHEON.

Prior to the meeting the members met at luncheon at the Hotel Victoria, when Mr. S. E. Whitehead presided over a representative gathering which included a number of distinguished guests, among whom were Sir Russell Bencraft and Brigadier E. M. Jack (Chairman and Deputy-Chairman respectively of the Southampton Gaslight and Coke Company), Mr. Stephen Lacey (President of The Institution of Gas Engineers), Mr. J. R. W. Alexander (Secretary of The Institution of Gas Engineers), Mr. W. D. Rowe (Manager of the B.C.G.A.), Mr. F. B. Richards (Chairman of the Council of the S.B.G.I.), Mr. R. N. Webb (President of the Manchester District Association of Gas Engineers), Mr. A. Kellock (Hon. Secretary and Treasurer of the North British Association of Gas Managers), together with Mr. R. Summerson and Mr. F. H. Higton (President and Hon. Secretary respectively of the London and Southern District Junior Gas Association), and Mr. S. B. Jones and Mr. K. L. Clark (President and Hon. Secretary respectively of the Western Junior Gas Association).

The Loyal Toast having been duly honoured,

Mr. D. C. Cross (Lea Bridge), Vice-President of the Association, rose to propose the Toast of "The Visitors." They had, he observed, a number of very distinguished guests on that occasion, among whom he thought they should give a special welcome to the Directors of the Southampton Gaslight and Coke Company—Sir Russell Bencraft (Chairman) and Brigadier E. M. Jack (Deputy-Chairman). These were both names well known in the Gas Industry, and Sir Russell Bencraft was not only highly esteemed in the Industry, being a Past-President of the British Commercial Gas Association, but he was also a great sportsman. In this connection it might interest them to know that he was recently honoured by the Hampshire Cricket Club upon the completion of 60 years' association with that body. He assured Sir Russell that the Association were delighted to have his General Manager as their President. Their Association had had many illustrious Presidents in its time, but they felt they now had at their head a man who deserved that honour as much as any of their past-Presidents. Among their other guests he would mention Mr. Stephen Lacey; it was a particular honour to know that a member of their Association had attained the high position of President of The Institution of Gas Engineers. They were proud of that fact and felt delighted that he was with them on that occasion. Then they also had with them Mr. R. N. Webb, President of the Manchester District Association of Gas Engineers; it was very gratifying to know that other district associations honoured them by the presence of their Presidents at their meetings. He referred, in addition, to the presence on that occasion of the Presidents and Secretaries of the two Junior Associations which were affiliated with them. The Senior Body welcomed them and assured them of the keen interest they took in the work of the Juniors—work which they regarded with admiration. Mr. Cross went on to say how pleased they were to have with them Mr. A. Kellock, Secretary of the North British Association. There was one outstanding family name connected with the history of the Gas Industry, and that was Woodall: they welcomed on that occasion Lieut.-Col. H. W. Woodall—a name which was esteemed all over the country.

Mr. Cross referred to other of their guests on that occasion, including the Technical Press. It was not often, he remarked, that they had the opportunity of saying a word about the Press, but they did appreciate the way they looked after their interests and kept them informed of what was going on. Without the Press, he said, they could not do much. Like the gasholder's function on the gas-works, the Press collected and stored the Industry's technical information. On behalf of the Association, concluded Mr. Cross, he welcomed all their guests and asked the members to drink the Toast of "The Visitors," coupling with it the names of Sir Russell Bencraft and Brigadier Jack.

A Compliment to Southampton.

Sir Russell Bencraft responded to the Toast, remarking how glad he was to be present to support their President. They thought very highly of Mr. Whitehead in Southampton and regarded it as a compliment to their Undertaking that the Association had elected him as their President; he was sure that when his year of office was over they would have no cause to regret their choice. In conclusion, Sir Russell extended to the Association a cordial invitation to visit Southampton for their summer meeting on July 9 next, on which occasion he hoped they would be able to show the members something of interest.

Brigadier E. M. Jack also responded to the Toast and echoed all that Sir Russell Bencraft had said in regard to Mr. Whitehead. No Gas Engineer would think the worse of them, he said, for saying that they had a better Engineer than any other. He thanked the Association most sincerely for their hospitality.

Mr. R. N. Webb (President of the Manchester District Association of Gas Engineers) said how delighted he was to be with them. He regarded his acceptance of their kind invitation as a duty he owed to his own Association of which he had been elected President the previous Friday, on which occasion Mr. Whitehead had visited them—so he was determined to return the compliment if he was able. Mr. Webb remarked that he had met their President many years ago, and there was a particular "bond" between them in that they had both served under Mr. Bond, the one at Leeds and the other at Southport. For that reason it was an especial pleasure to Mr. Webb to be with him that day. He brought the Association greetings from the North; they were all working in the same business—a business which was one of the most important in the country; it was up to each one of them to make it still more important, and he was certain they were accomplishing that object. Results throughout the country indicated that their business was progressing very rapidly. In conclusion, he thanked the Association very much for the kind welcome they had given him.

"The Association."

Mr. Stephen Lacey (President of The Institution of Gas Engineers) proposed the Toast of "The Association," with which he coupled the name of their President. In the first place, Mr. Lacey said he would like to thank Mr. Cross for the kind words with which he had welcomed him in proposing the previous Toast. Mr. Lacey was very proud to be a product of the Southern Association, and he was equally glad to have the privilege of proposing this Toast, because as President for the time being of The Institution of Gas Engineers, he was in a better position to appreciate fully the valuable work which was done by the District Associations as a whole, not only in relation to the work of the Institution but in relation to the work of the Industry generally. The membership of the District Associations included the great majority of the executive officers

of gas undertakings in the country, and it was hardly necessary for him to say that this was essential to the policy of the Industry.

What the Gas Industry wanted to-day, emphasized Mr. Lacey, was effective co-ordination combined with individual initiative, and the atmosphere of friendliness and goodwill which was so characteristic of the District Associations was one in which that combination could thrive. It was natural that he should be particularly interested in the health and welfare of this Association of which he was a member, and he was glad to take that opportunity of saying how grateful he was to them for the means of getting into friendly contact with his colleagues in the Industry. He had the greatest pleasure in coupling with this Toast the name of their President. Mr. Whitehead, as they all knew, was a highly valued member of the Association, while his position as Director, Engineer, and General Manager of the Southampton Gaslight and Coke Company made him exceptionally suitable for the Presidency. He wished Mr. Whitehead a most successful year of office, and, judging by his own experience, he knew he would have the support of both his Board of Directors and all the members of the Association.

The PRESIDENT, in responding, remarked that his first duty was to thank Mr. Lacey for the kind way in which he had proposed the Toast. They had not forgotten Mr. Lacey's good work as President of the Southern Association. He would also like to thank Sir Russell Bencraft and Brigadier Jack for their presence on that occasion, which was a compliment not only to himself but also to the Association. He referred with regret to the unavoidable absence of Mr. T. Carmichael. Under the inspiration of Mr. Lacey and their other past-Presidents—and they relied upon their past-Presidents for their help and guidance—Mr. Whitehead assured them that he would do his best to uphold the prestige of the Association, and he hoped they would merit the kind things which Mr. Lacey had said about them.

The General Meeting.

The PRESIDENT occupied the chair at the subsequent business meeting, and, at the outset, expressed his gratification at such a representative gathering.

The minutes of the previous meeting, as published in the "GAS JOURNAL," were taken as read and confirmed, after which the PRESIDENT moved the adoption of the Committee's Report, which had been previously circulated to members. This was seconded by Mr. R. J. H. CLARK (Plymouth) and carried unanimously.

The PRESIDENT announced that in view of the fact that it was Coronation Year the Committee had decided to increase the Association's usual contribution to The Institution of Gas Engineers' Benevolent Fund from 30 guineas to 50 guineas, and he read the following letter from the Secretary of the Institution in this connection:

13th March, 1937.

W. A. HOWIE, Esq., M.Inst.Gas E.,
Hon. Secretary and Treasurer,
Southern Association of Gas Engineers and Managers,
Gas-Works, Gravesend.

DEAR MR. HOWIE,—

It was with considerable gratification that I received, on behalf of the Committee of Management, your letter intimating that the Southern Association of Gas Engineers and Managers had generously resolved, to mark the Coronation of H.M. King George VI., to increase its customary subscription to the Benevolent Fund of The Institution of Gas Engineers from thirty to fifty guineas.

The number of cases assisted by the Fund has grown from 15 to 27 yearly during the last eight years and applications for assistance continue to be received from members and their dependents in acute distress.

The expenditure has increased from £582 to £814 per annum during the same period, and the number of contributors has been raised from 518 to 943.

Your Association's long support of the Fund, as of all matters pertaining to the Gas Industry in general and The Institution of Gas Engineers in particular, has this year been made even more tangible, and no more fitting manner could be found of celebrating the Coronation of Their Majesties.

We are all very grateful to you.

Yours faithfully,
(Signed) J. R. W. ALEXANDER,
Honorary Secretary.

New Members.

On the proposition of the PRESIDENT, seconded by Mr. D. C. CROSS (Lea Bridge), Vice-President, the following were elected to membership of the Association:

C. Birchmore (Farnham).
J. H. Dyde (Finchley).
J. V. Knight (Trowbridge).
G. Neil (Southampton).

It was moved by Mr. W. GROGONO (Croydon), seconded by Mr. L. J. LANGFORD (Tunbridge Wells), and unanimously agreed that the President be appointed to represent the Association on the Council of The Institution of Gas Engineers for the ensuing year.

In acknowledgment, the PRESIDENT said he would be pleased to do what he could to represent them on the Council of the Institution. He added that Mr. R. J. H. Clark had been nominated by the Committee as an additional representative of the Association on the Council.

The President went on to express the thanks of the members to Mr. Clark for all he had done during his year as President of the Association. Last year had been an outstanding year in the history of the Association—a year which fully upheld their traditions. Mr. Clark had carried out his duties at great personal inconvenience in view of the considerable distance he had to travel to attend meetings; but notwithstanding that he had carried them out very well. He gave them a most interesting Presidential Address, while they had spent a very pleasant day at Plymouth, in which connection they were also grateful to Mrs. Clark for the way she had entertained the ladies on that occasion. He congratulated Mr. Clark upon a very successful year of office and thanked him for all he had done for the Association, at the same time asking him to accept a silver salver as a memento of a happy year and as a mark of the members' esteem.

Mr. R. J. H. CLARK expressed his great appreciation of this presentation and also of the kind way in which it had been presented. It would serve to remind him of one of the happiest years of his life. If anything he had been able to do during his year of office had met with their approval he was amply rewarded. Like all past-Presidents he was deeply conscious of his indebtedness to the Hon. Secretary, and he took this opportunity of thanking Mr. Howie for all he had done for him, and the members generally for the support which he received at all times. On behalf of his Company, which through him they had honoured as well as himself, Mr. Clark tendered to the members his very sincere and grateful thanks.

Presidential Address

of S. E. Whitehead, B.Sc., M.I.Mech.E., Southampton

My first duty is to express my sincere thanks for the compliment you have paid me in electing me to the Presidency of this Association, and to assure you that I fully appreciate both the honour you have done me and the responsibilities of the office. No effort will be lacking on my part to further the objects of the Association or the welfare of its members.

I appreciate the honour more particularly as the District Associations, of which ours is the largest and one of the oldest, are in my opinion playing a part of ever-increasing importance in the activities of our Industry. The meetings, being less formal and more frequent than those of the Institution, and dealing with matters of localized interest, are of the greatest value to members and therefore to the undertakings they serve. This applies with even greater force to the district meetings than to the meetings of the main Association, and a glance at the list of subjects discussed by the Eastern and Western Sections will, when the frank and informal nature of the discussions is remembered, make it difficult to conceive a more valuable organization.

It is still to be regretted that the attendances at the district meetings leave much to be desired, but this is not due to any lack of usefulness. Rather I would attribute it to two factors—firstly, that many members have never made a serious attempt to take part in these meetings and discussions, and therefore do not appreciate their value; secondly, that the multiplicity of meetings, committees, and conferences which go to make up so large a part of the gas manager's life to-day render regular attendance impossible.

It is now some 18 years since I was elected a member of the Association and it is interesting to note the changes that have occurred in that period.

We are the Southern Association of Gas Engineers and Managers, and in those days—soon after the war—the em-

phasis was decidedly on the "Engineer." This was shown by the nature of the Papers read and discussed, by the themes of Presidential Addresses, and so on. To-day, the word "Manager" takes precedence, and management entails far more administration, utilization, and sales work than construction or manufacturing problems. In fact, the average gas manager to-day has very little time to devote to engineering proper.

This trend is reflected in the activities, and even to a certain degree in the personnel, of our Association. More distribution and sales specialists are found in our ranks and more sales and utilization topics are discussed. This is all to the good of the Association, and while we may secretly deplore the fact that we have little opportunity of carrying out original investigations, or even of doing as much real engineering work as we would wish, I feel that we can derive a good deal of satisfaction from the knowledge that the Association is keeping well abreast of the times in interest and usefulness. Another consolation is found in the excellence of the work and plant offered by those members of the Society of British Gas Industries who cater for the needs of our undertakings.

The changes referred to above have another effect—namely, to make it increasingly difficult to select a subject for one's Presidential Address, and although I would have preferred to depart from the customary description of works and methods, I find it impossible to do so. In saying this there is no wish to disparage the excellent addresses of my predecessors, of the value of which I am fully conscious.

At Southampton, however, although we have been far from idle during the past six or seven years, there is nothing spectacular to show in the way of results. Development has been steady, but it has not been easy owing to a number of serious handicaps, some of which are perhaps less severely felt in the cases of most undertakings. I propose therefore to enumerate the chief difficulties, and to ask you to keep these in mind in connection with the account of work and methods which follows.

They are:

(1) High capital expenditure, with its unfortunate effect upon the price of gas.
(2) A congested works, cut by roads and sidings into five separate plots.
(3) A large and straggling outer area intersected by rivers and stretches of forest land.
(4) Keen electrical competition from a municipally-owned "selected" station.

The Southampton Company has recently acquired the Gas Undertaking of the Winchester Water and Gas Company, but my remarks to-day include no reference to that Company's works or district. They were only taken over on Jan. 1 last, and no "linking up" has yet been contemplated.

Future Policy.

Having regard to general requirements of the Industry as a whole and to the above considerations as they affect Southampton in particular, I think our aims may be summarized broadly as follows:

(*a*) To reduce the price of gas to the lowest possible figure after making due allowance, by means of a suitable block system or two-part tariff, for the capital charges involved in supplying the small consumer.
(*b*) To place on sale appliances which are both attractive and thoroughly efficient at the lowest possible terms for cash and hire-purchase.
(*c*) To increase the maintenance service and the frequency of the calls of maintenance fitters or examiners.
(*d*) Consistent with the foregoing requirements, to reduce new capital expenditure to a minimum, and to get rid of existing capital expenditure by depreciating to the fullest extent.

Capital Expenditure.

For many years the history of my Company has been a continual struggle against over-capitalization, due no doubt to the fact that it was a "maximum-dividend" Company, and that consequently in the days when competition was practically unknown there was little inducement to reduce the price of gas by minimizing capital expenditure. In other words, the operation of the maximum-dividend system, coupled with a virtual monopoly, tended to extravagance in buildings, land, &c., which cannot be tolerated to-day. Due regard had not been had to the future in that considerable expenditure was incurred for many years without a corresponding provision for writing down the capital assets.

In 1905 the capital expenditure was no less than £877 per million cu.ft., representing a charge of 10·3d. per thousand (say, about 2d. per therm). The figure remained over £800 until just before the War, when my predecessor, the late Mr. J. R. H. Jacobs, set out to tackle the problem. The success of his efforts, the effect of the War period, and the present position are shown in curve "A" of fig. 1.

As you will see from that curve, the capital expenditure is now below £550 per million cu.ft., but the acquisition of the Winchester Company, as well as extensions in progress and contemplated, will probably bring the figure to £600 or thereabouts in the near future—a charge of 7¼d. per 1,000 cu.ft. or 1·57d. per therm. This it will be realized is too high—a serious handicap which can only be evaded by rigorous economy and prudent depreciation over a long period.

The tendency, referred to later, for the population to move to outlying districts has, of course, had its effect on capital. Taking the period 1913-1936, whereas the total expenditure on Works and Plant (excluding land) fell from

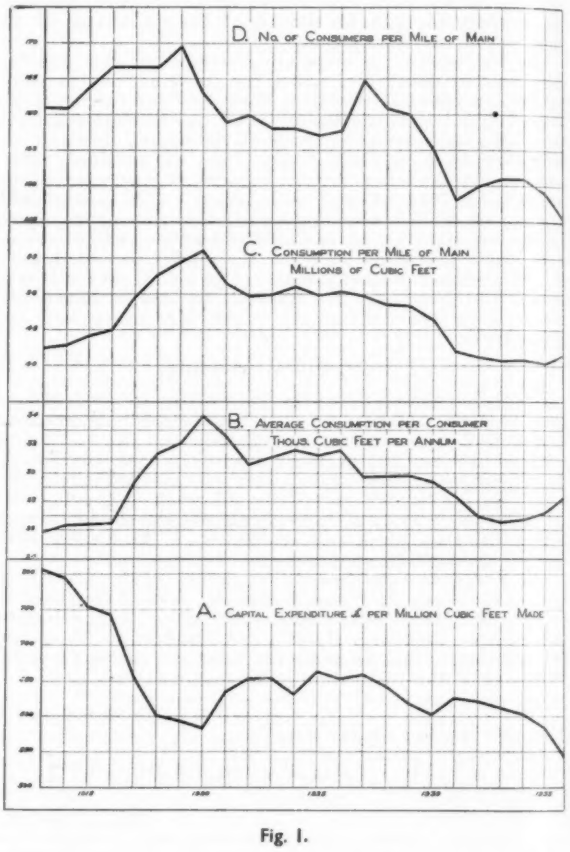

D. No. of Consumers per Mile of Main
C. Consumption per Mile of Main
Millions of Cubic Feet
B. Average Consumption per Consumer
Thous. Cubic Feet per Annum
A. Capital Expenditure £ per Million Cubic Feet Made

Fig. 1.

£358 to £232 per million cu.ft., that on mains and services rose from £153 per million cu.ft. to £163. This is indicated in another way, by curves "C" and "D" of fig. 1.

Works.

The Southampton Gas-Works, including gasholders, meter and stove shops, stores, garage, &c., occupies only 15½ acres, which you will agree is very small for a maximum daily output of over 7 million cu.ft. The plan given in fig. 2 indicates the congested state of the Works and shows hatched all additions since 1930, while current and proposed extensions are indicated by dotted lines.

Seaborne coal is delivered alongside the wharf in steamers carrying up to 2,200 tons, and unloaded by two electric cranes which deposit it, *via* hoppers and band conveyor, into the breaker. The broken coal is weighed and distributed to the various stores by band conveyors, this system being used for practically all handling of materials throughout the Works. Coke is brought back to the same wharf for grading and distribution by similar means. The lack of adequate storage facilities for coal and coke is at present claiming attention, and it is intended to provide additional stocking ground in the near future by reclaiming mudland alongside the wharf.

Development of the Works in the past has been somewhat haphazard, with the result that there are several scattered boiler houses, governor houses, pumps, &c., which could be worked more economically if centralized, and schemes are in preparation for a central boiler plant, together with

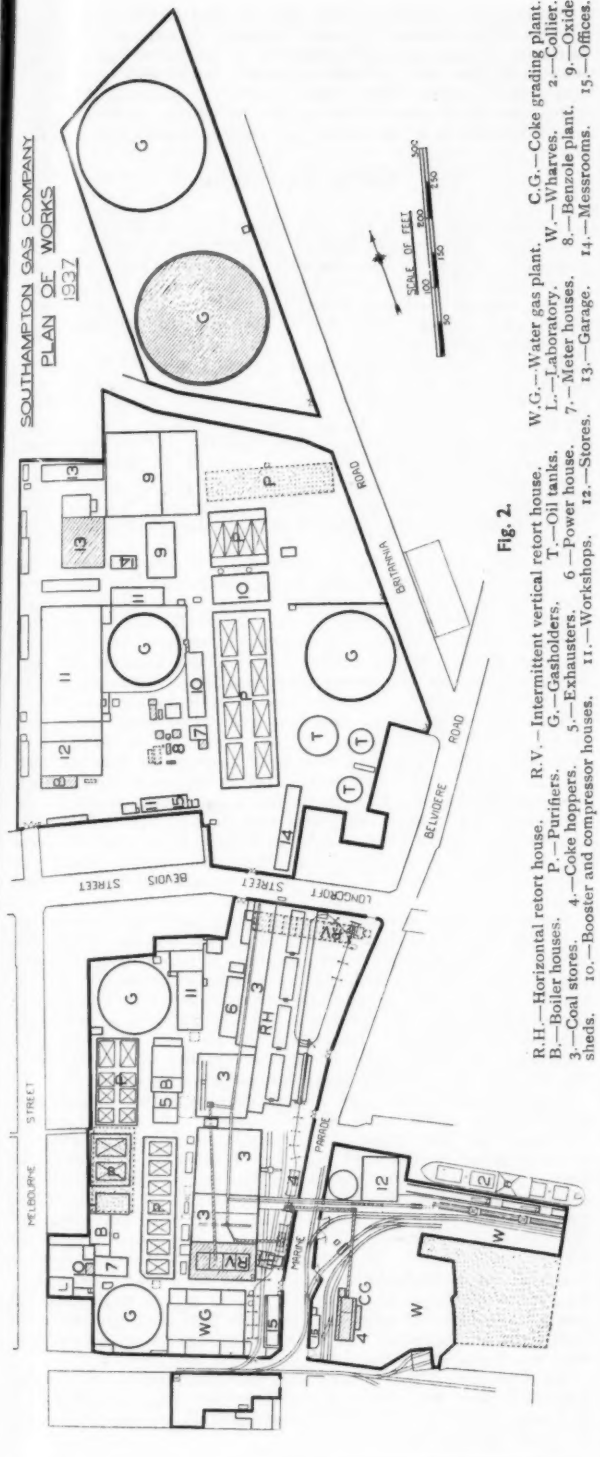


Fig. 2.

extensions to the power house, exhauster house, &c. The generating plant, at present, is gas-engine driven, but the added plant will be steam-operated in conjunction with new waste-heat boilers.

Carbonizing Plant.

The carbonizing plant in 1930 consisted of 25 beds of horizontal retorts and it was apparent firstly, that additional plant was needed, and secondly, that its provision had been delayed too long to admit of any of the existing retort plant being shut down and modernized. It was accordingly necessary to convert a coal store into a retort house, and a vertical system was the only one possible. The coal carbonized is wholly Durham, and for this and other reasons intermittent vertical chambers were adopted. Four beds of 6 chambers were erected by the Woodall-Duckham Company and put to work in December, 1931.

It may be said at once that this plant has been thoroughly successful and has fulfilled all expectations. It is unfortunately impossible to give gas-making results, as we have been unable to isolate the gas from that made in the horizontal plant except for an occasional day, which is too short a period to yield reliable figures. From our experience of previous working, however, the calculated results have been well up to the guarantees.

The only difficulty experienced with this plant was with regard to coke, which was harder than that formerly produced. As, however, it was at the same time drier and more efficiently graded, any prejudice against this fuel was quickly dispelled. The position now is that most of our customers prefer the harder coke, in which, I may add, it is the custom to leave 2 or 2½% of the volatile matter.

The anticipated savings in labour have been realized, and maintenance—an all-important matter when carbonizing Durham coal in vertical retorts—has been reasonable. So satisfactory, in fact, has been our experience of intermittent vertical chambers that a provisional order for a further installation has been placed.

In connection with maintenance some details of actual expenditure may be of use. The chambers have been at work for five years, during which time 249,300 tons of Durham coal have been carbonized. After 4½ years' work the plant was shut down and a general repair to the brickwork carried out by the contractors. This consisted of patching and pointing wherever necessary, and renewing certain courses in the bottom 8-10 ft. of the setting. The cost of 5 years' maintenance may be set out thus:

—	Cost.	Pence per Ton of Coal
	£ s. d.	
Maintenance of chambers by Gas Company—		
Materials	550 12 1	0·53
Labour	1,289 8 4	1·24
Maintenance of chambers by contractor	2,311 11 7	2·23
Maintenance of mechanical plant, ironwork, wire ropes, &c., by Gas Company—		
Materials	643 10 8	0·62
Labour	2,039 2 11	1·96
Total	£6,834 5 7	6·58

It is anticipated that a further two years' useful life will be obtained from this plant, during which "current maintenance" will continue and a further 100,000 tons of coal will be carbonized. A complete reset and other renewals costing in all probably £9,500 will be necessary to put the plant into first-class condition. In that event the overall maintenance figure will be 12·5d. per ton (say, 0·82d. per 1,000 cu.ft., or 0·15d. per therm).

Coke Sales.

The creation of a good market for coke is becoming more and more important every year, although the effect of the price of coke on the cost of gas is not always fully realized. Coke at the present moment is in brisk demand and, in fact, "sells itself," but it must be remembered that this is due to the artificial conditions created by the sudden rearmament activity in the Engineering Trades. This cannot continue indefinitely and, moreover, many new coke oven plants are being started up, so that it is probable that in a comparatively short time we shall again experience competition from furnace coke to an even more serious degree than was the case two years ago. It is therefore essential that we should consolidate the present position and increase our local markets, and unquestionably the best means of doing this is to pay the greatest possible attention to the preparation and grading of the coke.

In this connection I am aware that I am preaching to the converted; but I cannot stress too highly the work of the London and Counties Coke Association in this direction—work which will become still more valuable in the course of time.

Coke Screening Plant.

When the intermittent vertical chambers were erected it was necessary to provide additional coke storage and new grading plant. A disused wharf on the east side of the road was therefore converted into a coke yard and a system of band conveyors installed to transport all coke thereto, over an existing road bridge. Reinforced concrete hoppers of 500 tons capacity were erected, and upon these a grading plant consisting of Fraser & Chalmers' vibrating screens and a "Nelson" coke cutter (Fig. 3).

The first screen is a single-deck "Gyrex" of 2 in. mesh which delivers screened large coke into the first hopper compartment, or alternatively into the cutter, the screenings and broken coke being taken by an inclined belt to a double-deck "Gyrex" screen, with meshes 1¼ in. and ⅜ in.

for the separation of two grades of broken coke. The screenings from this finally pass to a " Vibrex " screen of $\frac{3}{8}$ in. mesh.

Any grade of coke is taken from the bottom of the hopper and elevated to a de-breezing screen for the purpose of filling railway trucks and road vehicles, while other screens and Belle Isle weighing machines are provided on a raised platform for bagging.

The capacity of this plant is 30 tons per hour and it has been in operation since December, 1931. I feel therefore that the following figures relating to maintenance and running costs over that period will be of interest:

Period	5 years
Coke to grading plant	221,299 tons
Graded coke sold	184,031 ,,

Total maintenance cost over 5 years £1,399 11s. 4d., equal to 1·51d. per ton of unscreened coke handled, or 1·82d. per ton of graded coke sold.

This figure is made up as follows:

—	—	Pence per Ton Unscreened Coke.	Pence per Ton Graded Coke.
	£ s. d.		
Renewal of mesh screens	521 3 0	0·56	0·68
Other screen parts, &c.	398 1 0	0·43	0·52
Renewal of pricker rings (cutter)	207 18 0	0·23	0·27
,, ,, lining plates	149 7 7	0·16	0·19
Labour	123 1 9	0·13	0·16
Total	£1,399 11 4	1·51	1·82

The heaviest maintenance item is naturally the replacement of the screen fabrics, and it is interesting to note the

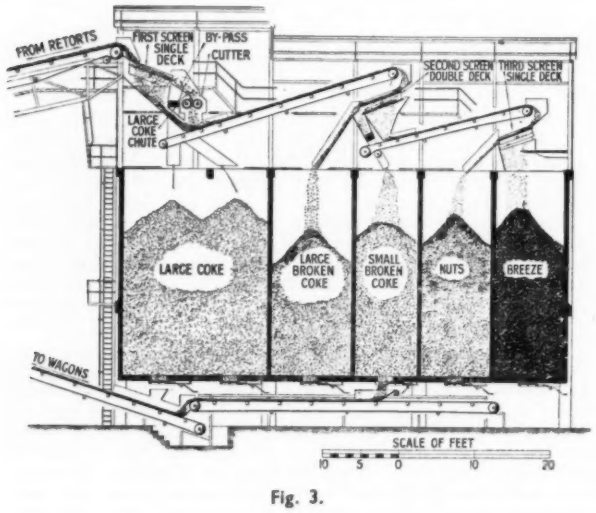


Fig. 3.

life of these in tons. The first three screens of the " Gyrex " type have a similar life, averaging about 1,850 tons each. The mesh of the $\frac{3}{8}$ in. " Vibrex " screen, however, has a life of only 640 tons, possibly owing to the greater speed of vibration. Loose woven screens are found to fail rapidly owing to rubbing at the intersections, and some method of jointing is essential. Welding was found too expensive, but screens galvanized after manufacture have solved this problem.

The rolls or " pricker rings " of the Nelson cutter, which are of manganese steel, are found to require renewal every year. Approximately 30% of the total coke passes through the breaker, giving a life of 13,300 tons.

—	Cost in Pence.	
	Per Ton of Unscreened Coke.	Per Ton of Graded Coke.
Capital charges	2·76	3·32
Labour (operating)	3·04	3·65
Electricity	0·37	0·44
Oil and other stores	0·07	0·08
Depreciation of coke	12·46	14·95
Maintenance	1·51	1·82
Total	20·21	24·26

As regards running costs, the biggest expense is always in the deterioration of coke through breakage. Our experience is that an additional 7% of breeze is made in this way, and the cost of this amounts to 12·46d. per ton of unscreened coke. The total costs of grading coke are therefore as shown in the table, in which capital charges are taken as 10% on cutter, screening plant, and hoppers.

Other Extensions.

Among other work recently carried out is the erection in 1934 of a 4-lift spirally-guided gasholder of 3½ million cu.ft. capacity. Prior to this date our total holder capacity was 3½ million cu.ft. only—one-half of a maximum day's output—and consisted of one 2-million cu.ft. holder and several small and ancient ones which are now in process of examination and repair.

The new holder which is in a steel tank 188 ft. 3 in. in diameter and 37 ft. 4 in. deep, built on a concrete raft 10 ft. below ground level, was erected by Messrs. R. & J. Dempster, Ltd., and is of standard design. The fourth lift throws 13½ in. pressure and until the Works mains and seals are completely modernized, cannot be filled by ordinary methods. Arrangements are provided, however, to effect this by means of the district boosters, and the additional pressure has proved of great value at times of peak load.

We have for some years been short of purifier capacity. Extensions have repeatedly been postponed on account of the " capital " bogey but have at last been taken in hand. Six cast-iron boxes each 40 ft. by 30 ft. are now being erected on a reinforced concrete structure 13 ft. above ground level. Spent oxide will be discharged through bottom doors in the usual way, and new material will be fed to the boxes by elevator and shuttle belt conveyor.

This set of purifiers presents two somewhat novel features, for both of which I am indebted to Mr. G. C. Pearson, Chief Engineer of the Birmingham Gas Department. First, hydraulic valves are being used throughout, each consisting of a U-pipe giving a total seal of 40 in. and provided with water inlet and outlet, &c. It is hoped by this means to obtain a really positive valve, and to avoid the falling off in efficiency of the plant which sooner or later usually makes itself felt by reason of leaking disc valves.

Secondly, the six boxes are being arranged in series, without the normal provision of catch boxes. It is felt that this arrangement will enable us to obtain the full effectiveness of all the boxes as compared with the partial utility of the catch boxes, and that, moreover, the purifying material may be rendered fully spent with a minimum number of changes. The whole of the six boxes will be " swung " in rotation, the only precaution necessary being the maintaining of two clean boxes at all times.

Crude benzole recovery and gas dehydration plant were installed in 1933 and these present no novel points, although one alteration subsequently made was productive of very good results and may be of interest. At first the gas passing to the benzole half of the washer was a mixture of coal gas and water gas. It was realized that the water gas had the effect of diluting the coal gas and thus reducing the efficiency of extraction, and also that blue water gas (which is usually made) contained neither benzole nor naphthalene. A by-pass was therefore put in by means of which blue water gas was mixed with the coal gas at a point between the benzole and calcium chloride halves of the washer, the full concentration of benzole in coal gas being thus obtained in the former.

As a result of this alteration, the production of benzole has been increased from 1·7 gallons per ton of coal to 2·1 gallons, while the quality improved at the same time from 67% at 120° to 71%.

Distribution.

In common with most undertakings we have had to contend with considerable developments in outlying areas and a migration of consumers from the town districts. While the total output of gas has increased continuously, that proportion which was cheapest to handle has actually decreased, with a corresponding reduction in the consumption per mile of main and an additional load on boosters and compressors feeding the outer areas.

Incidentally this movement of population has had an adverse effect on the domestic consumption per consumer. Families which have moved out into the country districts in many cases formerly shared a house in the town area with others, and after the move these families appear as two consumers whereas they were formerly only one for the purposes of our records.

The district of supply comprises 110 sq. miles and is shown in fig. 4. I would particularly call your attention

to the position of the Works in relation to the River Itchen, on the east side of which a great deal of housing has been completed in the past few years, while more is in course of erection or contemplated. That side of the river is fed by a 14 in. low-pressure main and a high-pressure main, both of which are carried over Northam Bridge. The Authorities have for years considered this bridge too weak to carry an additional main and this has seriously handicapped our development, all additional loads having perforce to be carried by the high-pressure system.

In 1929-30 a 24 in. main 2½ miles long was laid from the Works in a westerly direction and since that time we have adopted a see-saw policy between the various districts to avoid further capital expenditure on compressors and mains.

The high-pressure plant was put down in 1921 to serve a part of the town and west district as well as the extreme eastern portion of the area. The laying of the 24 in. main enabled us to shut down the town and west high-pressure governors and thus render the high-pressure plant, without extension, capable of dealing with the increased loads in the east. Extensions and additional business in the west, however, had by 1935 called for the reopening of some of the west district governors, and this necessitated the erection last year of an additional compressor set. The latter now gives very little margin at peak hours, and further low-pressure extensions are to be put in hand.

Fig. 4.

If the Corporation decide at a reasonably early date to rebuild Northam Bridge, a long-needed main will be laid from the Works to the east side of the river; but if, as has been the case for the past five years, there is further delay and uncertainty, the extension must take place in a westerly direction so that the high-pressure supply will be available solely for districts east of the river.

Uniformity of pressure is receiving close attention. Some thousands of service governors have recently been installed with most satisfactory results, and in other cases large numbers of appliance governors have been fitted. The improvement in the working of the appliances, particularly cookers and water-heaters, has convinced me that this practice is worthy of more general adoption.

Sales.

The sales policy of any successful gas undertaking must be to sell gas—*i.e.*, to obtain permanent consumption rather than to make large profits on appliances, and to retain the goodwill of existing and new consumers by providing the best possible gas supply, appliances, and service. The retention of existing business is in my opinion even more important than securing new business, as it usually involves no additional capital outlay. Saturation point with regard to the sale of appliances has by no means been reached, although there will obviously come a time when it must be approached and when sales will accordingly expand at a lower rate.

Our organization and methods of four or five years ago were inadequate for these requirements, even under the comparatively easy conditions of those days. Serious competition was then just beginning to make itself felt and it was realized that a drastic re-organization was called for. The need for the same has since become more and more apparent.

The means adopted to effect this re-organization were broadly:

(1) To discourage simple hire and make hire-purchase more attractive.
(2) To render the purchase of an appliance as simple and cheap as possible.
(3) To improve maintenance and adjustment services.
(4) To launch an intensive selling scheme.
(5) To introduce a suitable block system of charge.

Electricity supply in Southampton is municipally owned and the Corporation's Works is a " selected " station supplying the grid. It is a very efficient undertaking and sells current in the town at ½d. per unit, *plus* exceptionally low standing charges. Competition, therefore, while being straightforward except in regard to public lighting, is very keen.

The Electricity Department offered an enamel cooker on simple hire at prices from 6s. 9d. per quarter upwards. This was met by a choice of four enamelled gas cookers on 7 years' limited hire, at 6s. per quarter, or, with oven-control and plate-rack, at 7s. 6d. In the past three years 11,680 of these cookers have been sold, an average of 75 per week, and it is interesting to note that last year alone 43 electric cookers were displaced. The issue of black cookers has been stopped except to certain slot consumers and the total number of enamelled cookers sold during the past three years was 17,300.

In order to simplify purchase of an appliance, cookers and fires are fixed free (up to 20 ft.) and a fixing charge is included in the terms quoted for all other appliances. This enables a firm price to be quoted at once, and it may here be mentioned that the profit included in the price, after allowing for fixing and maintenance, is lower than is the case with many undertakings. I cannot help feeling that many companies aim at too high a profit on the appliance, losing sight of the fact that what they really wish to sell is gas. More uniformity in pricing appliances would simplify matters considerably, particularly for companies like ourselves whose prices are lower than some in nearby areas.

Items 3 and 4 were dealt with by the establishment of a " Special Service Section " of outdoor salesmen and examiners. Of the former, some 17 are usually employed, and the value of the sales they have effected has averaged £31,000 per annum. The examiners are skilled gasfitters who have been given some sales training, and they deal with all consumers in rotation. Their duty is to examine and adjust all appliances, to take a census of the same, to deal with, or if serious, report, all complaints, and to use the opportunity thus afforded for sales purposes. These men pay for themselves as will be seen from the following results of the past four years, during which the number of examiners employed averaged 10½:

Number of calls made	41,043
Value of sales effected	£35,804
Profit on sales	£6,101
Wages paid	£5,609
Net profit per annum	£492
Number of complaints rectified	20,072
" " " reported	11 586

A commission scheme was also introduced, under which all employees, whether on the sales staff or not, in receipt of less than £250 per annum, are eligible for recognition of their sales efforts. This scheme, which has been fully described elsewhere, has been most successful, and the commission paid has averaged between 1 and 1¼% of the total sales.

The price of gas is undoubtedly one of the principal factors in all sales work, and it is to be regretted that recent tendencies in the cost of coal, other materials, and labour render a substantial reduction impossible. Early

in 1934 a block system of charge was adopted. Under this, our prices, in the Borough of Southampton, are as follows:

For Domestic and Ordinary Commercial Purposes.

Up to 250,000 Cu.Ft. per Quarter.

Consumption per Quarter.	Price of Gas.	
	Per Therm.	Per 1,000 Cu.Ft
Cu.Ft.	d.	s. d.
Up to 10,000	9·60	3 8·16
After the first 10,000 cu.ft.—		
10,100 to 25,000	9·00	3 5·40
25,100 ,, 50,000	8·50	3 3·10
50,100 ,, 100,000	8·00	3 0·80
100,100 ,, 150,000	7·50	2 10·50
150,100 ,, 250,000	7·00	2 8·20

For Domestic and Ordinary Commercial Purposes.

Over 250,000 Cu.Ft. per Quarter. [On Total Consumption.]

Consumption per Quarter.	Discount.	Price of Gas.	
		Per Therm.	Per 1,000 Cu.Ft.
Cu.Ft.	%	d.	s. d.
250,100 to 500,000	35	6·24	2 4·70
500,100 ,, 1,000,000	40	5·76	2 2·50
Over 1,000,000	42½	5·52	2 1·39

For Industrial Purposes and Central Heating

[On Total Consumption.]

Consumption per Quarter.	Discount.	Price of Gas.	
		Per Therm.	Per 1,000 Cu.Ft.
Cu.Ft.	%	d.	s. d.
Up to 10,000	*Nil*	9·60	3 8·16
10,100 ,, 50,000	25	7·20	2 9·12
50,100 ,, 250,000	30	6·72	2 6·91
250,100 ,, 500,000	35	6·24	2 4·70
500,100 ,, 1,000,000	40	5·76	2 2·50
1,000,100 ,, 4,000,000	42½	5·52	2 1·39
4,000,100 ,, 7,000,000	45	5·28	2 0·29
7,000,100 ,, 10,000,000	47½	5·04	1 11·18
10,000,100 ,, 15,000,000	50	4·80	1 10·08
15,000,100 ,, 20,000,000	52½	4·56	1 8·98
Over 20,000,000	55	4·32	1 7·87

These discounts have had a marked effect in obtaining an increase in consumption particularly with regard to central heating, large scale cooking, and industrial use, and it is of interest to note that the kitchens of all the hotels, restaurants, cafés, and canteens in our area of supply (with the exception of those directly controlled by the Corporation) have gas equipment, the great majority of them being "all gas." In 1933 a list was made of 20 consumers each taking over 2 million cu.ft. annually. Their aggregate consumption in 1933 was 77·8 million cu.ft., and this has risen to 179 million cu.ft. for 1936.

Central heating business is not easy to obtain, as we are in competition not only with oil and cheap coals, but also with our own product, coke. The discounts allowed for this business, however, are proving effective, and during 1936 eleven gas-fired central heating boilers were installed, the total number in operation now being 26.

Results of Sales Policy.

In general, the results of our methods may be considered satisfactory, although, of course, the great bulk of the new business is on hire-purchase. Complete records of sales before the year 1932 are not available; the total selling price of appliances sold for cash and on limited hire (including carcassing) since that date are as follows:

	£
1932	22,660
1933	55,946
1934	80,932
1935	81,810
1936	83,093

These figures indicate the expansion of the business although, as the prices and grades of the appliances have varied between 1932 and 1936, the numerical increase is rather different. The numbers of the principal appliances sold during those years are given below:

Year.	Cookers.	Water Heaters.	Coppers.	Fires and Radiators.	Totals.
1932	1,262	689	1,229	1,940	5,120
1933	3,155	616	1,818	4,254	9,843
1934	6,059	960	1,396	3,603	12,018
1935	5,636	1,123	1,690	2,922	11,371
1936	5,613	1,185	1,631	2 727	11,159

The figure which should, of course, be watched more carefully than any other, is the average consumption per consumer. It has been a common experience that this average has declined during recent years, and there is no doubt that this is largely due to the increased efficiency of the modern appliances sold in enormous quantities throughout the country. It is also partly due to the reduced spending power of our working-class consumers during the recent years of depression, and is further affected, as mentioned previously, by the migration of families from overcrowded areas to new housing estates.

It is gratifying to note that in spite of these facts the consumption of gas per domestic consumer is remaining fairly constant. For the year 1936, in fact, there is a distinct increase but this is no doubt partly due to better conditions of trade and employment. Figures for recent years are given below:

Year.	Average Domestic Consumption per Annum.		
	All Domestic Consumers.	Ordinary.	Prepayment.
	Cu.Ft.	Cu.Ft.	Cu.Ft.
1931	27,710	39,970	21,590
1932	25,030	34,540	20,290
1933	24,710	33,290	20,390
1934	24,690	34,550	19,870
1935	23,860	33,260	19,430
1936	24,550	33,960	20,200

A still better state of affairs will be noted from curve "B" of fig. 1, but this, of course, includes all consumers—industrial and large-scale as well as domestic.

You may observe that I have said little about public lighting. Unfortunately, and, as I think, most unfairly, we are not allowed to tender for any public lighting in the Borough, and the few remaining gas lamps are being gradually replaced by electricity. It is pleasing to know, however, that a different state of affairs exists in the areas outside the Corporation's jurisdiction. The new Borough of Eastleigh, for instance, is entirely illuminated by gas and we also have the lighting in practically every rural district in our area of supply. This, I think, speaks for itself.

Gas-Consuming Appliances.

Remarkable as have been the sales returns of the Industry in recent years, they would, I believe, have been still more satisfactory had it been possible to procure efficient appliances at a more reasonable cost. In comparison with our competitors we are offering apparatus for cooking, heating, and hot water which is too costly. There are also too many varieties of each, and there is an urgent call for more standardization, particularly in the case of cookers.

The manufacturers can here be of great assistance and should be able to produce, by some form of co-operation, a less costly range of appliances of equal efficiency to those now available. The enterprise of the Gas Light and Coke Company in introducing a range of pressed steel cookers will be closely watched and should prove beneficial.

The proposed "National (or Regional) Marketing Policy" appears at first sight to be a long-sought cure for the present state of affairs, and if adopted generally, combining, of course, "National (or Regional) purchasing," would doubtless be effective. There are, however, several aspects of such a policy which render it difficult of application. The principal obstacle is that referred to above—namely, lack of uniformity in the percentage of gross profit which each individual undertaking deems it prudent to take, and in the charges for fixing and maintenance. A further drawback is the cost of the necessary advertising which, as far as present experience goes, is high. Yet another difficulty is found in the numerous types of each appliance available, and in the selection of a few which would be universally acceptable. A greater degree of standardization must, therefore, in my opinion, precede the introduction of any such National scheme.

In Conclusion.

I fear that I have failed to give you any information which is of a particularly novel character. Most of the problems I have mentioned are, I am aware, met with in every gas undertaking to-day. I hope, however, that some, at least, of the points discussed, may be found of use, and that in any case, a description of our Works and methods may add to the interest of the visit which I hope you will pay us in large numbers in July next. My Chairman and his co-Directors intend to make that visit enjoyable, and I would like to take this opportunity of thanking them for

their interest in the Southern Association, and for their permission to accept the honourable office to which you have been good enough to elect me.

Vote of Thanks.

Mr. C. F. Botley (Hastings), in proposing a vote of thanks to the President for his Address, remarked that Mr. Whitehead had spoken in several places with disparagement of what he had done. They did not accept that, however, for they knew what difficulties he had experienced and the steps he had taken to overcome them. It was very valuable to have the experience of their President in regard to the various methods he had pursued, and it was not the first time they had had the benefit of Mr. Whitehead's views. They would look forward to visiting their President's works at Southampton. Mr. Botley particularly commended to their attention the President's observations in regard to the coke market. If they were not very careful to look after their coke using plant they might find themselves in a very difficult position in the future. In conclusion, he enquired if there was still an optional flat rate system of charge at Southampton.

Mr. L. Trewby, in seconding the vote, observed that he had listened to a large number of Presidential Addresses since he joined the Association in 1902, and he had enjoyed this one more than any. It was full of useful tips, and they congratulated Mr. Whitehead upon what he had done at Southampton.

The President briefly acknowledged the vote, remarking that it was particularly gratifying that it should have been proposed and seconded by two such old friends of his. In reply to Mr. Botley's question, he said that the scales of charges to which he had referred in his Address were optional. There was still the alternative of the old flat rate with a small discount. They were now a basic price undertaking, he added, and embodied the Wrottesley Clause. In conclusion, the President once again reminded the members of the visit to Southampton on July 9, and said they were looking forward to a large gathering.

The Joint Select Committee on Gas Charges

Continuing our report of the proceedings of the Joint Select Committee on Gas Charges, whose previous sessions were reported in the "JOURNAL" on Feb. 17 and 24, and March 17. Full particulars of the terms of reference, the personnel of the Committee, and the various Counsel briefed will be found upon reference to the Dec. 23 and Feb. 17 issues.

Proceedings concluded

Conclusion of WEDNESDAY, MARCH 10.

Sir *David Milne-Watson* (President of the National Gas Council and Governor of the Gas Light and Coke Company) said the London County Council had expressed entire satisfaction with the operation of the basic price system—in the case of his Company—which came into operation in January, 1932, with a basic price of 11d. per therm and a basic dividend of 5%. The Gas Light and Coke Company had already acted on the proposal of the London County Council to adopt Section 6 of the Gasworks Undertakings Act, 1934, and published their price, which was 8·6d. per therm until last year, when it was increased to 8·7d. because of the increase in the price of coal to improve the miners' wages.

The Chairman said that although this publication of price had been objected to, no precise objections had been mentioned, and it would be interesting to know exactly what was the objection.

Sir *David Milne-Watson* said he saw no objection, and had already adopted the Section of the Act in question.

Answering the Chairman as to why the South Metropolitan Gas Company was not a member of the National Gas Council—nor were the South Suburban and Commercial Gas Companies—Sir David said that Company had always tended to be self-sufficient and to follow rules of its own, and he did not think there was any desire not to assist any cause for the benefit of the Industry as a whole.

Discussing with the Committee the whole question of devising tariffs, Sir David said it was impossible to attempt to frame a tariff without taking into account the particular conditions of the area, and in the case of the Gas Light and Coke Company there were a number of tariffs. He went on to refer to the two-part tariff recently introduced by the Gas Light and Coke Company, and said it was gradually gaining popularity, although it was too early yet to speak of the results.

THURSDAY, MARCH 11.

The Chairman said he would like to give an indication of what was in the Committee's mind, after nine days' hearing. He said the Committee had been well informed on most of the matters in question and there seemed to be a great measure of unity among all those appearing before the Committee on quite a number of points. Indeed, the points of difference were very few and could easily be isolated. The position was that at various times in the history of the Industry various systems of charge had been introduced each of which had been proved by experience to have certain deficiencies in completely protecting everybody. It was agreed that the Industry was of great importance and that it required fair play and as much freedom as possible. The general view appeared to be that the basic price system gave a great deal of protection to the small consumer. There was, however, some difference of opinion as to whether the protection now given by competition was enough in all cases. He believed there was agreement that protection was given in almost all cases but that there might be some consumers who could not be protected by competition.

Sir Walter Monckton said that Sir David Milne-Watson would challenge the view that the basic price system did not protect every consumer.

The Chairman said it would be agreed that it was difficult to predict how long protection would be afforded under any system of charge; and suppose the Committee came to the conclusion that some watching brief should be held by some authority, the question was, what authority? Was it better to have a specific Tribunal as suggested, or the Board of Trade, which presumably was the only alternative? On these matters, the Committee would like as much advice as possible.

Sir Walter Monckton said he would endeavour to frame his evidence on the lines suggested by the Chairman. He was anxious to suggest that, as the Board of Trade had in many cases fixed the basic price, it should be the controlling authority to revise the basic price.

Mr. Bidder reminded the Committee that the London County Council, as already mentioned by Sir Lynden Macassey, did not press for a special Tribunal in preference to the Board of Trade.

Sir *David Milne-Watson*, who then continued his evidence, handed in resolutions passed by the National Gas Council on Feb. 19, 1937, in relation to the views which had been placed before the Committee with regard to further protection for consumers under the basic price system, which we give below:

The Board, having considered the proposals of the London County Council, and having heard a Report of the proceedings to date before the Joint Committee, unanimously resolved that:

(1) How to provide the poorest section of the community with a reasonable share of essential services and commodities is a political and economic problem which cannot usefully be approached—and much less solved—solely by consideration of the terms upon which a supply of gas should be made available by certain specified gas companies (*i.e.*, those subject to the basic price provisions) or, indeed, by gas undertakers generally.

(2) For Parliament to delegate to an outside authority (as suggested by the London County Council) the power to adjudicate upon the "published price" or the charges made for gas would restrict the initiative of gas undertakers and retard the development of gas supply to the detriment of the general body of gas consumers.

(3) To delegate such powers, in respect of a single public utility service, without simultaneously providing for like powers to be exercised in relation to other essential services and commodities (*e.g.*, water, electricity, coal, oil, rent, bread, meat, milk, &c.) would be grossly inequitable to a public utility service which is not only already subject to a much more stringent form of statutory control than other public services, but is faced with fierce competition.

(4) In the view of the Board, the cumulative effect of
   (*a*) the force of public opinion;
   (*b*) the necessity of retaining the goodwill of gas consumers;

(c) the strength of competition from alternative means of lighting, heating, and cooking; and

(d) the present statutory control of dividends and profits;

constitutes a fully effective commercial safeguard against the risk of unreasonable charges being made by gas undertakers to small consumers.

There was a feeling in the Gas Industry, he continued, that in some quarters an idea was being fostered that electricity could supplant or suppress gas, but that was impossible. He recalled the part which the Gas Industry played in the war and the large quantities of munitions in various forms in the manufacture of which the Gas Industry was indispensable. Moreover, as a by-product, the Gas Industry produced enough tar to cover the whole of the roads in this country. Without the Gas Industry these by-products would not be available.

Sir David Milne-Watson then dealt with the effect of competition, and said that in his view there was absolutely no justification for suggesting that there was even a substratum of consumers who were not protected by competition, and he added there was not a basic price company which did not have competition either from a municipal or company electricity supply undertaking. There might be a few streets in which there were no electric mains, or houses in which the landlord would not allow electricity to be installed, but that did not affect the competitive price of gas. In his own case, the price of gas had been reduced because of electrical competition and in some parts of the added areas the Gas Light and Coke Company had reduced the price of gas below that which it was authorized by Parliament to charge, in an endeavour to get more business against the competition of electricity. In this connection, Sir David mentioned Pinner and Grays.

Commenting on a suggestion by the Chairman that the cost of distributing electricity might be higher than the cost of distributing gas to very poor consumers,

Sir David said that could not be so because the fiercest competition in his Company's area was in East Ham, West Ham, Fulham, Marylebone, and St. Pancras, in all of which there were very large working-class districts. There was more competition in those working-class districts than anywhere else.

The CHAIRMAN referred to statements that have been made concerning additions to rent in certain cases to cover the cost of electricity, and asked as to the amount of this addition.

Mr. JACQUES ABADY said he knew from his own Westminster experience that in the case of the Council flats there, the addition was from 10d. to 1s. 6d. per week according to the type of flat.

Sir *David Milne-Watson* said there were cases, in his area, in which the fixed charge for electricity under the two-part tariff was added to the rent, the electricity being charged to the tenant at ½d. per unit. The standing charge was in some cases 10% of the rateable value, and the tenant was, so to speak, unaware he was paying it. If, however, gas was used in any form, such tenants were not allowed the advantage of the two-part tariff, and a much higher price was charged for the electricity. That form of competition, therefore, was very severe, as the tenants were induced to use electricity at ½d. per unit. Nothing could be more fallacious than to suggest that either from the point of cost or charge any consumer was at the mercy of the gas company. He added that other companies were meeting with the same form of competition.

The question of compulsory tariffs was then discussed. Sir David said that in the case of his own Company, the consumer could choose to take gas either at a flat rate or on a two-part tariff, and naturally he chose the tariff which was most beneficial for his particular consumption. This alternative provided scope for good salesmanship because consumers could be induced to put in more apparatus and use more gas and so get gas more cheaply.

The CHAIRMAN said he assumed that in putting forward a new tariff it was essential that the first step in it should not be higher than the old flat rate.

Sir *David* said he agreed absolutely, and added that it was then that salesmanship came in to try to induce the consumer to use more gas by the prospect of getting it more cheaply.

Mr. JACQUES ABADY put it that under Section 1 of the Gas Regulation Act of 1920 there was a general power of revision of prices on the part of local authorities, and that this applied to the majority of basic price companies.

Mr. BIDDER pointed out that this could only be done at certain intervals according to the terms of the particular Act or Order.

Mr. ABADY agreed that the period varied according to the Company, but there was that general power of revision which applied not only to sliding scale companies but also to basic price companies.

The CHAIRMAN said the Committee were not aware of that provision, and he thanked Mr. Abady for drawing attention to it.

Sir *David Milne-Watson*, continuing, said he had consulted his colleagues and they authorized him to put before the Committee the suggestion that they would agree to legislation giving power to the Board of Trade from time to time and at any time on the application of a local authority or gas company to revise the basic price in accordance with the provisions of Section 1 (3) of the Gas Regulation Act of 1920 as amended by any public General Act.

The CHAIRMAN remarked that this dealt only with the basic price, and possibly the revision of the basic price would not meet all possible emergencies.

Sir *David Milne-Watson* said he thought it would meet the position, and added that the South Metropolitan Gas Company was the first case of any complaint against a basic price company during all the years the basic price system had been in operation. He said he did not approve at all of the proposal of the South Metropolitan Gas Company with regard to revision.

Passing to the question of the uneconomic consumer, Sir David said there must always be consumers who did not pay their share of the overheads. The Industry had spent a large sum of money in fitting up houses where there were prepayment meters, and the point was that if the price of gas was raised to such a figure that these consumers could not use gas at all, there would be the risk of losing the value of all that capital expenditure, and the gas companies could not face the prospect of losing thousands of consumers in that way. Therefore, it was essential to pursue a policy of selling gas at the cheapest possible price and, indeed, to offer terms which would induce these people to use more gas. He could not imagine anything worse than restriction upon the gas companies in the matter of offering inducement for an increased consumption on the part of domestic consumers.

Basic Price Revision.

The CHAIRMAN, speaking of the proposals to control the basic price, said he was wondering whether it would be possible to couple that with some control of the actual price.

Sir *David Milne-Watson* said he did not think that was advisable, because in the case of the small increase in the price of gas in the Gas Light and Coke Company's area last year, presumably it would have been necessary to wait for action to be taken by the local authorities and then possibly the case would have had to go before some Tribunal. Parliament had, in fact, said that that increase was justified at the time, but if the other procedure had been adopted the Company for a long time would be charging a lower price for gas than it ought to have done. It was for this reason that he considered that the proposition of the London County Council for a Special Tribunal was unworkable. In the case of electricity companies there was no such control of charges and there was no suggestion in the McGowan Report that there should be control of the actual charges made for electricity. It would be quite impossible to carry on the Gas Industry if there were such a control of prices, knowing that local authorities, especially those owning electricity works, were inclined to do everything to put obstacles in the way of gas development. To be put under the control of the local authorities in the manner suggested by the London County Council would make the conduct of the gas business impossible.

Continuing, he said that if the Committee decided there was not sufficient control in the basic price system itself as modified by the suggestion he had made with regard to revision, then he would certainly ask for a margin within which a company could increase its prices without having to come before any Tribunal. Anything less than that would not be justice.

Sir David then expressed his views with regard to the proposal of the South Metropolitan Gas Company concerning revision, and said this possessed the same vice as the London County Council proposal, particularly as both involved the question of deciding reasonableness, which must be linked up with the ability of the person to pay.

Mr. GLOVER, for the local authorities, cross-examined and suggested that it was necessary to reduce the basic price to the region of the actual price.

Sir *David* agreed that where there was a considerable margin between the basic price and the actual price, there might have to be an immediate revision to bring the two closer together.

Mr. GLOVER then referred to Section 1 of the Gas Regulation Act of 1920, and ascertained that the Gas Light and Coke Company became a basic price company in 1931, and the first revision was possible in 1940. Sir *David* agreed that there were companies where there were powers of revision at any time.

The CHAIRMAN said the important point was that the Board of Trade had power of revision at any moment in the case of some companies, and Sir David had said the Industry as a whole, through the National Gas Council, was willing to accept revision at any time.

Sir *David* said that where there was a wide margin between the basic and actual price there was nothing to worry about, as no company would dream of charging the full basic price, because of the effect on business.

Mr. GLOVER then asked if there was any provision under the Gas Light and Coke Company's Acts for inspection of books by the local authority, apart from the published accounts, to ascertain whether a revision of price was called for.

Sir *David* said there was not, but that the accounts in themselves were so complete that nothing was necessary.

The CHAIRMAN said that what impressed him as the result of the evidence of Sir David Milne-Watson was that, given good management, the Gas Industry could hold its own against competition provided there was freedom and elasticity of management, so that attractive tariffs could be offered.

Mr. GLOVER put it to Sir David that he apparently regarded gas at a great disadvantage with the electricity industry in regard to competition.

Sir *David* replied that the Gas Industry was not such a darling of the State as was electricity.

FRIDAY, MARCH 12.

Sir *David Milne-Watson* was further cross-examined by Sir Lynden Macassey, attention being first directed to the manner in which a basic price is determined. It was then put to Sir David that a revision of the basic price would not in any way affect the distribution of the charges to different classes of consumers. Sir David replied that while it did not do this, the revision of the basic price downwards reduced the margin with regard to dividend authorization, and if circumstances made it necessary to charge a higher price than a low basic price then the Company's dividend would go down. In other words, it would be necessary to work on a narrower margin.

COUNSEL put it that no revision of the basic price would protect the small consumer.

The CHAIRMAN said it was agreed that the basic price system by itself did not always protect, but there was some difference of opinion as to whether competition always gave protection. The next point seemed to be whether the power proposed to be given to the Board of Trade was sufficient protection.

Sir LYNDEN MACASSEY agreed.

The CHAIRMAN said it appeared to him that the power proposed to be given to the Board of Trade to revise at any time was something of a bludgeon. The Board of Trade could do anything; it could reduce the basic price in Sheffield, for example, to 3d. or even 2d. per therm, and this gave complete power to the Board of Trade to revise the basic price of any Company should the Board think fit. The objection, as he saw it, was to giving this form of control.

Sir LYNDEN MACASSEY said it would be an effective weapon in reducing the excess dividend above the basic dividend which a gas Company might pay, but it did not restrict the Company as regards raising its charges to its different classes of consumer exactly as it thought fit, and he would argue that before the Committee later.

Sir *David Milne-Watson* replied that it was obviously to the interest of the Company to charge prices which were economic having regard to competition.

In re-examination, Sir David, when asked with regard to the application of the Wrottesley clause to all basic price companies, replied that in his view the principle of this clause should not be applied without due regard to the circumstances of the particular case. Indeed, he suggested that it was the intention of the recommendation in the Report of the Wrottesley clause.

Sir David, in further answer to Sir Walter Monckton, said the two main things he had in mind in objecting to control of the actual price were that there must be freedom to adjust charges to meet market conditions as regards materials, labour, &c., and also to take such steps as might be necessary to meet competition. He wished to stress before the Committee the extreme undesirability from the point of view of the Industry of anybody being able to control prices or to prevent an increase in the actual price which in the particular circumstance the company found inevitable. Increases of this sort must be made at once, and if the reason were known—such as an increase in cost of coal—the public willingly accepted an increase. If, however, the application of an increase was delayed due to public enquiries having to be held, then the public forgot the reason and complained.

In conclusion Sir David again stressed upon the Committee the importance of not placing on the Gas Industry restrictions which were stronger than those placed upon electricity undertakings.

Consulting the National Gas Council.

Mr. *Frank Jones* was then recalled by the CHAIRMAN and was questioned as to whether it might not be a safeguard if in matters of this kind the National Gas Council was consulted and discussion took place; would it not have been possible then that the mistake which the South Metropolitan Gas Company admitted having made would not in fact have been made?

Mr. *Jones* said he was concerned with other companies who were members of the National Gas Council and prices were discussed, but he did not think it practicable that details of every case should be discussed with the National Gas Council. The South Metropolitan Gas Company were individualists.

The CHAIRMAN asked whether it would not be a safeguard to the public if it were made a matter of routine practice that such matters should always be referred to the Industry—*i.e.*, the National Gas Council—before being promulgated.

Mr. *Jones* said he thought it would be very difficult for every individual company to deal with tariff increases through the National Gas Council.

The CHAIRMAN said this was one of the points which the Committee would have to consider—viz., whether in some way the Industry could organize itself and control itself in these matters and whether there was any safeguard to be found in that direction. What he was trying to get at was to see whether the National Gas Council would in future be inclusive of all the large undertakings and whether there would be an advantage in that event of making it a preliminary principle to deal with these matters before any action was taken by an individual member.

Mr. *Jones* replied that these matters were always discussed as matters of principle in the Industry, but he did not think details of individual tariffs which might be proposed could be dealt with in that way.

Experience at Newcastle-upon-Tyne.

Mr. *T. P. Ridley* (Member of the Executive Board of the National Gas Council and Commercial Manager and Secretary of the Newcastle-on-Tyne and Gateshead Gas Company) said he had been a member of the Wrottesley Committee. The object of his evidence, however, was to give the facts of a large Company in the North of England working under rather different conditions from those of the Gas Light and Coke Company. He said his Company became a basic price Company by a Bill promoted in the 1928-29 Session, and although there were 22 petitions against it by local authorities the Bill was passed with the right of application for revision by local authorities at periods of 5 years. At the end of the first five years, two local authorities applied for revision of the basic price on the ground that circumstances warranted a reduction. There was no complaint against the working of the basic price system and eventually it was agreed to reduce the basic price by 0·2d. per therm.

Witness then gave details of the development of his Company, and spoke of the advantages and results obtained with two-part and other tariffs, especially in the case of industrial users. The two-part tariff, however, was not taken much advantage of by domestic users, and they preferred to remain on the flat rate. Subsequently, in 1934, a special domestic block tariff was introduced, the top charge being the same as the flat rate already being charged. The tariff was based on the number of rooms and was graduated according to the number of therms taken, there being also variations according to the period of the year. The result obtained with this tariff had been extremely satisfactory.

Sir LYNDEN MACASSEY then addressed the Committee on behalf of the London County Council. He said it had become apparent that the Report of this Committee would be a document of the greatest possible importance, not merely so far as consumers of basic price companies were concerned, but also as regards the basic price companies themselves. He had no doubt, he said, that Parliament would accept the Report of the Committee as a document upon which they would model their future practice and policy with regard to basic price companies.

Counsel reviewed the circumstances which led up to the enquiry and stressed the point that the Company under its new tariff increased the total charge to prepayment consumers by 33⅓%, including the charge for hire of the prepayment fittings, in the case of consumers taking up to 10 therms per month—viz., an increase from 8¾d. to 11d. per therm for gas and from 1¾d. per therm to 3d. per therm for hire. Commenting on the great services of the South Metropolitan Gas Company in regard to supply of gas in South London, Counsel remarked that Mr. Jones had admitted a mistake had been made in foreseeing the reaction on the public of putting this new tariff into operation. After contending that the action of the London County Council was fully justified and remarking that its views had been placed before the Committee with the greatest moderation, Sir Lynden said that what happened in this case showed what a company could do, quite legally under the basic price system as it at present existed.

Passing to the protection given by the basic price system to the ordinary consumer, Counsel contended that there was no legislative restriction upon a gas company in regard to what it charged the consumers. The company could distribute its costs in any way it pleased over the various classes of consumers, to enable it to pay the basic dividend, and that had been shown in a striking manner by the action taken by the South Metropolitan Gas Company.

Assuming that the Committee came to the conclusion that some form of protection was necessary, Sir Lynden dealt with the proposal made by Sir David Milne-Watson, giving power to the Board of Trade to revise the basic price at any time. Under that proposal the Board of Trade would be precluded from having regard to the circumstance which the London County Council suggested was most materially relevant and important—viz., the effect of the charges proposed on any particular class of consumer. Nor did the proposal affect the power of the gas companies to make whatever charge they liked, or the incidence of the charges among the various classes of consumers. Therefore, on behalf of the London County Council he contended that a revision of the basic price alone would afford no protection to the poor consumer.

Coming to the suggestion of the South Metropolitan Gas Company with regard to revision, Sir Lynden Macassey said the objections of the London County Council to that proposal were in the first place that it only applied to a compulsory tariff, and therefore if a voluntary tariff were imposed the London County Council could not act, notwithstanding the small consumer might be charged an unreasonable increase of the flat rate with an optional tariff of another kind. Further, the London County Council held the view that it would be invidious to attempt to define the small consumer on the basis of the number of therms taken per month. The London County Council under the proposal could not intervene except in the case of consumers of 10 therms or less.

The CHAIRMAN suggested that if the small consumer, so defined, was properly dealt with, it was improbable that the larger consumers would not be properly dealt with.

Mr. TYLDESLEY JONES said it had been understood that the London County Council accepted that a consumption of 10 therms or less constituted a small consumer.

Sir LYNDEN MACASSEY then dealt with the London County Council's proposals and said the real issue now between the London County Council and the National Gas Council and the South Metropolitan Gas Company was whether there should be a right of appeal by the London County Council to a special Tribunal or to the Board of Trade with regard to the actual price charged. On the criticisms that appeals by the London County Council of this nature would involve many delays, Counsel said changes of prices among the London gas companies were

very infrequent and therefore the delays complained of were not likely to be very serious.

Key to Problem Not Apparent.

The CHAIRMAN, expressing the appreciation of the Committee for the assistance it had received from Counsel representing the various parties, said that notwithstanding the large measure of agreement, the key to the problem was not apparent yet. Whether the Committee would be able to find the ideal solution, nobody could say. His own impression was that in such a rapidly changing industry as the Gas Industry, so remote from a monopoly now, it was very difficult to suppose that any formula would fit every case. Whatever formula was applied would more or less be wrong if it were not applied with discretion. As had been pointed out again and again, the main thing was not to cramp the competitive power of the Industry. It was agreed that that was of extreme importance.

The Enquiry then closed.

Gas Undertakings' Results

Ascot (South-Eastern).

The Directors of the Ascot District Gas and Electricity Company report that for the year, after paying the preference dividend for the half-year ended June 30, 1936, and interim dividends on the ordinary stock at the rate of £5% per annum in respect of the nine months ended Sept. 30, 1936, there is a total available balance of £12,350. The Directors have paid the preference dividend for the six months ended Dec. 31, 1936, and have recommended the payment of a final dividend on the ordinary stock in respect of the three months ended Dec. 31, 1936, at the rate of £5% per annum, less income-tax, making a total dividend of £5%, less tax, for the year 1936. These dividends together absorb the sum of £5,731, and leave £6,619 to be carried forward to the credit of the current year. Under the provisions of the Ascot District Gas and Electricity Act, 1935, the Company's capital was consolidated on Jan. 1, 1936.

Auckland (N.Z.).

The report of the Directors of the Auckland Gas Company for the year ended Dec. 31, 1936, states that the profits, after deducting working expenses, rates and taxes. depreciation, and other charges, amount to £67,734, to which has to be added the carry forward at the credit of profit and loss after the deduction of the February dividend, £8,970, making the amount at credit of profit and loss £76,704, less interim dividend, paid August, 1936, £30,937, leaving balance to be dealt with £45,767, less amount transferred to income-tax reserve account, £5,000—£40,767. The liability for income-tax payable on profits earned for the year 1935, and payable in February next, is £39,716. The anticipated liability in respect of the year just ended will be £36,962, making a total of £76,678. Against this liability there are reserves (including the amount added this year) of £65,000. The Directors recommend a dividend of 2¼% for the half-year (which, with the 2¾% paid in August last, makes a total of 5½% for the year) on the £1 fully paid shares, and proportionate amount on the contributing shares 15s. paid, £30,937, leaving to be carried forward the sum of £9,831.

Barnard Castle.

The Barnard Castle Gas Company have had a successful year with a profit of £885. Some debentures had been paid off and the holders of others had agreed to a reduction of interest from 6 to 5%. The Directors recommended a dividend of 2½% on the original consolidated stock and of £1 15s. 7d. on the new ordinary stock.

Basingstoke (Associated Utilities).

The report of the Directors of the Basingstoke Gas Company for the year ended Dec. 31, 1936, presents a very normal picture of steady progress, the sales of gas having advanced by 3·3% with an addition of only £1,263 to the capital expended. The return from the sale of residuals has also improved, and it is satisfactory that the balance of net revenue carried forward to next account shows a modest increase.

Carmarthen.

The report of the Directors of the Carmarthen Gas Company for the year ended Dec. 31, 1936, states that during the past year the sale of gas had increased by nearly one million cu.ft. A large number of new mains and services have been laid, and the revenue from the sale of gas shows a satisfactory increase. During the year the Company successfully tendered for a number of street lamps. The Company was able to effect a reduction in the price of gas during the summer. The new retort plant has worked smoothly and efficiently throughout the year, and the Directors feel that the very large expenditure undertaken on account of this plant has been fully justified. During the year the Company suffered a very great loss in the death of Dr. L. M. Bowen-Jones, who had been a member of the Board for many years and Chairman for eleven years. The Directors recommended dividends at the rate of 5% for the full year on the new preference shares, and 7½% and 7% on the ordinary, 1870, and on the new ordinary, 1875, 1880 shares, respectively, for the full year ended Dec. 31, 1936. An interim dividend at the rate of 6% and 5½%, respectively, had already been paid for the half-year ended June 30 last, on account of the ordinary and new ordinary shares.

Dublin.

The Directors of the Alliance and Dublin Consumers' Gas Company report for the half-year ended Dec. 31, 1936, that the accounts show a profit on the revenue account of £75,390, and, after providing for interest on debenture stock, there remains the sum of £67,910, to which must be added a credit from interest amounting to £600, a credit from income-tax amounting to £1,824 and the sum of £50,655, being the balance brought from last account, making a total of £120,989. The Directors recommend the declaration of a dividend on the consolidated ordinary stock of the Company at the rate of £8% per annum, less income-tax, which will absorb the sum of £70,698, after which a balance of £50,291 will remain to be carried to the next account.

Jersey.

The report of the Directors of the Jersey Gas Light Company for the year ended Dec. 31, 1936, states that the accounts show, after providing interest on the debenture loan, rentes, &c., a profit on the year's working of £10,213, which together with the balance brought in from the last account, and after payment of an interim dividend of 4% for the half-year ended June 30, 1936, leaves a balance at the credit of profit and loss account of £14,290. The Directors recommend payment of a dividend for the half-year ended Dec. 31, 1936, of 5%, making a total dividend of 9% for the year, and transfer to reserve fund of £1,155, leaving a balance of £8,935 to be carried forward to the next account. The number of new consumers connected to the mains of the Company during the year was 461 and the sales of gas show an increase of 12,087,000 cu.ft. or 3·85%. The demand for gas cookers, fires, water-heaters, &c., has again steadily increased during the year, resulting in 1,119 additional appliances being supplied. In addition to the reduction in 1936, the price of gas is being further lowered by 0·4d. per therm from the March meter readings, bringing the new price to 10·2d. per therm.

Londonderry.

The Directors of the Londonderry Gaslight Company report that for the year ended Dec. 31, 1936, the undivided balance brought forward from the previous year, after payment of dividend, amounts to £13,765, to which is added the year's profit, £3,715, making at total of £17,479. Out of this sum there has been paid a year's interest, less income-tax, on the loan capital, £159, interim dividends to June 30, 1936, of 5% on the old shares, and of 3½% on the new shares, less income-tax, £1,719, leaving a balance of £15,601. The Directors propose to pay a final dividend for the year to Dec. 31, 1936, of 5% on the old shares, and of 3½% on the new shares, less income-tax, which will absorb £1,719, carrying forward to the next account £13,882. A sum of £2,500 has been charged in the revenue account for the purpose of meeting future cost of renewals.

Maryborough (Queensland).

The report of the Directors of the Maryborough Gas and Coke Company for the half-year ended Dec. 31, 1936, states that notwithstanding a voluntary reduction in price of gas which came into operation at the beginning of November, gas sales show a slight increase as compared with the corresponding period of last year. After writing off £400 for depreciation and making provision for all other charges, the profits amount to £872. To this amount has to be added £292 brought forward from last half-year, making the total amount at credit of profit and loss account £1,163. The Directors recommended payment of a dividend of 5% per annum, amounting to £1,031, leaving a balance to be carried forward of £132.

Minehead.

The report of the Directors of the Minehead Gas-Light and Coke Company for the year ended Dec. 31, 1936, states that the balance of net profit for the year is £4,569, which, added to the amount brought forward from last account, £1,437, makes a total of £6,007. After deducting income-tax, £1,075, and debenture interest of £540, and carrying £246 to the renewals fund account, there remains a balance available for distribution of £4,145. The Directors recommend a dividend of 8%, less income-tax, on the original ordinary shares, which absorbs £2,867, leaving a balance to carry forward of £1,278. The Directors are

pleased to report a record sale of gas, amounting to 60,710,600 cu.ft., an increase of 2,981,300 cu.ft., or 5·2% over 1935. The sales of apparatus show a satisfactory increase, the net gain in consumers being 65 and cookers 84. The Minehead Gas Order, 1936, was granted on July 30, 1936, and from that date the Company became a statutory undertaking, selling gas on a thermal basis as from Jan. 1, 1937.

Rushden and Higham Ferrers.

The Directors of the Rushden and Higham Ferrers District Gas Company report for the year 1936 that the balance on the profit and loss account brought forward on Jan. 1, 1936, was £26,323. The amount available for dividends, £28,915, which, less dividend for half-year ended June 30, 1936, at rate of £15 10s.% for year on £20,000 original ordinary stock and dividend at the rate of £10 17s.% for year on £12,000 additional ordinary stock, less income-tax, leaves a balance on the profit and loss account on Dec. 31, 1936, of £27,237. The Directors propose dividends for the half-year ended Dec. 31, 1936, at the same rates as those declared for the half-year ended June 30, 1936, less income-tax, leaving a balance to be carried to the next account of £25,559.

Sydney.

The report of the Directors of the Australian Gas Light Company (Sydney) for the year ended Dec. 31, 1936, states that the net profits for the past year, including the balance brought forward, amount to £287,240, less interim dividend at 3% for the half-year ended June 30, 1936, £123,300, leave a balance at the credit of the profit and loss appropriation account of £163,940. The Directors now recommend the payment of a dividend of 3% for the half-year ended Dec. 31, 1936, on the "A" and "B" shares issued prior to Sept. 7, 1936, and at the same rate as from the dates of payment on the amounts paid (exclusive of premium) on the 25,000 "A" shares issued on Sept. 7, 1936, which will absorb in all £126,020, leaving a balance to be carried forward of £37,920.

Torquay.

The report of the Directors of the Torquay and Paignton Gas Company for the year ended Dec. 31, 1936, states that the yearly statement showed a balance of £13,162 to the credit of the profit and loss account. The Directors recommend that, after allowing for the interim dividend paid on Oct. 1 last, the full year's dividend (less income-tax) be declared. The demand for gas continues steadily to expand, an increased sale of over 25 million cu.ft. having been recorded. The output of appliances has reached a further high record, and sales continue to develop in a most satisfactory manner. The revenue from the sale of coke, tar, and benzole has also reached a new high level. The extension of the gas-making plant at the Hollacombe Works has been completed, and the erection of a new storage holder at the Barton Works is proceeding. These developments have been rendered necessary by the progressive expansion of the Company's business.

Tunbridge Wells (South-Eastern).

The Directors' report on the Tunbridge Wells Gas Company states that the audited statement of accounts of the Company for the year ended Dec. 31, 1936, shows that after paying in respect of the June half-year dividends at the rate of £7 4s.% per annum on the sliding scale stock, £5% per annum on the maximum stock, and after paying all fixed charges, there is a total available balance of £36,024, out of which the Directors recommend the payment of the following dividends in respect of the December half-year—viz., on the sliding scale stock, at the rate of £7 4s.% per annum, and on the maximum stock at the rate of £5% per annum. This will absorb the sum of £8,844, leaving £27,180 to be carried forward to the credit of the current year.

Wolverhampton.

The report of the Directors of the Wolverhampton Gas Company for the year ended Dec. 31, 1936, states that the net profit for the year, after payment of interest on the debenture stocks, &c., and contribution to pensions fund, is £21,654. An interim half-year's dividend was paid on Aug. 27, 1936, at the following rates—viz., £3% on the 6% preference stock; £2½% on the 5% preference stock and £3½% on the consolidated ordinary stock; and the Directors recommend final dividends at the same rates for the half-year ended Dec. 31, 1936, all less income-tax. They also recommend that the balance of £2,735 be carried forward. The Directors are pleased to be able to report a continued increase in the sale of gas, the increase over the output for the preceding year being 6·68%. There have been record sales of gas cookers and gas fires, and there has been a large and growing demand for all other types of appliances. The reconstruction of No. 3 installation of vertical retorts has been completed and the new plant is effecting considerable economies in manufacturing costs.

ALWAYS IN STOCK

STANTON

"New" Spun Iron Pipes

12 Feet Lengths	18 Feet Lengths
DIAMETER	DIAMETER
ins.	ins.
3	—
4	4
6	6
7	7
8	8
9	9
10	10
12	12

Vertically Cast Iron Pipes

9 Feet Lengths	12 Feet Lengths
DIAMETER	DIAMETER
ins.	ins.
3	—
4	4
6	6
8	8
9	9
10	10
12	12
	15
	18
	24

The Stanton Ironworks Company Limited, Near Nottingham

Trade Notes

Gas-Works Use Peckett Locomotives.

An order has been received by Peckett & Sons, Ltd., of Atlas Locomotive Works, St. George, Bristol, from the Cardiff Gas Light and Coke Company for a 0-4-0 locomotive for their Grangetown Works. A repeat order has also been placed with the firm by the Gas Light and Coke Company for two 0-4-0 locomotives for their Beckton Works.

An Artistic Publication.

There is much of interest to the gas engineer in a recent publication by Messrs. Peter Lind & Co., Ltd., Building and Civil Engineering Designers and Contractors, which artistically presents a selection of reinforced concrete and engineering structures from 1915 to 1936. The work, which runs to nearly seventy pages, is purely pictorial, consisting entirely of plates showing examples of the Firm's work which includes purifiers, coal bunkers for coke ovens, workshops, stores, and liquor wells for gas-works.

Stanton Centrifugal Pipes: Further Plant.

The Stanton Ironworks Company, Ltd., near Nottingham, have recently completed a plant of eight machines, which has been confined to the production of centrifugal pipes of 3 in. diameter and of 2½ in. diameter. This plant has now been in operation for the past six months.

The Company are now proceeding to put down a further plant, consisting of ten machines, to be confined to the production of 4 in. diameter pipes. It is hoped to get these new Works into production during the present year.

"Pegson" Rammers and Rippers.

The latest "Pegson" rammer and ripper leaflet represents quite a departure from the usual literature issued by various engineering firms, inasmuch as it incorporates pictures of a topical nature to illustrate the uses to which "Pegson" rippers and rammers can be put. The "Pegson-Barco" power ripper is entirely self-contained, complete with its own power unit and weighs but 90 lb. The "Pegson Power" rammer is a self-contained unit with magneto ignition. These models are made by Messrs. Pegson, Ltd., Coalville, Leicestershire.

Profitable Snack Bars.

From time to time the gas salesman is approached with queries relating to snack bars and their equipment; such queries might be outside the immediate scope of his knowledge, and, therefore, Messrs. Sumerling & Co., Ltd., 63-66, Bunhill Row, London, E.C. 1, have produced a folder dealing with the subject in a general manner. It is primarily intended to indicate a minimum of equipment required for a snack bar, and, while not pretending that it deals exhaustively with the subject, the firm do think it gives the salesman an idea of some essential items and should prove useful in addition to the special service department representative. Messrs. Sumerling will gladly supply copies to interested readers.

Felco Hoists, Ltd.

We have received from Felco Hoists, Ltd., 17, Victoria Street, S.W. 1, an illustrated leaflet describing "Felco" all steel triple gear chain blocks. It is claimed that these pulley blocks possess many important features. Headroom and weight have been reduced to a minimum, while strength and safety have been increased to a maximum, due to solid steel construction throughout. Every block is tested to 50% overload working, and 100% overload static, and a test certificate is issued with each block. Immediate deliveries can be given from stock.

To appreciate to the fullest extent the many advantages and the high efficiency of these blocks, it is desirable to examine and test same, and Messrs. Felco will be only too pleased to supply one on seven days' free trial.

Rightward Welding.

The first of a new series of technical information booklets to be issued by the British Oxygen Company, Ltd., Thames House, Millbank, Westminster, S.W. 1, deals with the rightward method of oxy-acetylene welding. The booklet is addressed in particular to welders, metallurgists, and engineers. Many advantages are claimed for the method, including a saving in cost, greater welding speed, and great economy in the consumption of the welding rod. Throughout the services of the Company's Sales Technical Service Department, instruction in the method of rightward welding has now been made generally available. All considering its application to their work are assured of the Company's assistance and help. A telephone or letter to any British Oxygen Company branch brings this aid.

PART 2

Domestic Utilization of Gas

by NORMAN S. SMITH, B.Sc. Assoc.M.Inst.Gas E.
Technical Editor, "Gas Journal" and "Gas Salesman"; Editor of the "Gas Salesman's Pocket Book."

and R. N. Le FEVRE M.Inst.Gas E., A.I.Mech.E.
Officer-in-Charge of Training, Gas Light and Coke Company; Assistant Head of Department Gas Engineering and Supply, Westminster Technical Institute

In common with its forerunner, Part 2 of "Domestic Utilization of Gas" is noteworthy for the Authors' originality of approach, facility of expression, and, above all, intimate knowledge of the problems which confront the gas salesman. *Part 2 of "Domestic Utilization of Gas" is a corollary to, and in no way a revision of, Part 1;* and its teaching carries on along lines of knowledge which in recent years have become essential to everyone concerned with the distribution and sale of gas and gas appliances.

CONTENTS
- - In Brief - -

- COMBUSTION
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- WATER-HEATING LOAD
- REFRIGERATION
- INFERENTIAL MEASUREMENT OF GAS

Price 5/6 post free
(24 Copies at 5/- each)

136 pages :: Profusely illustrated with original diagrams
Bound in Dark Green Rexine

WALTER KING, LTD., "Gas Journal" Offices, 11, Bolt Court, Fleet Street, E.C. 4

NOTE. PART 1 is being reprinted

Increasing Importance of pH Value.

Five years ago *p*H was a laboratory term, but to-day its importance is fully recognized. The Cambridge Instrument Company, Ltd., 45, Grosvenor Square, S.W. 1, point out that in five years' time this measurement will be as necessary in many processes as temperature or chemical analysis. The firm have published an illustrated folder giving examples of "Cambridge" recorders and electrode system installations in various parts of the country. At the Bournemouth Gas and Water Company's Works, an installation is employed in the water purification plant. It comprises a recording potentiometer, range 5·5 to 8 *p*H units, together with dip type antimony-calomel electrodes. The electrodes are inserted in the sedimentation tank after the acid, lumina, and afloc have been added to the water, so that the ultimate *p*H value is recorded.

Ashmore, Benson, Pease, & Co., Ltd.: Recent Contracts.

Messrs. Ashmore, Benson, Pease, & Co., Ltd., Stockton-on-Tees, have been successful in securing the following contracts:

United Kingdom Gas Corporation, Ltd.—The supply and erection at the Bridlington Gas-Works of a two-lift gasholder and steel tank of welded construction; capacity, 630,000 cu.ft., prepared for the addition of a third lift at some future date.

Redcar Corporation Gas Department.—Dismantling the inner lift of an existing two-lift column-guided gasholder and providing a new inner lift 7 ft. 8 in. diameter by 22 ft. deep.

Newcastle-upon-Tyne and Gateshead Gas Company.—The supply and erection of three purifiers of large capacity at the Redheugh Gas-Works.

Dorman Long & Co., Ltd.—The supply and erection at their Cleveland Iron and Steel Works of a "Klönne" type waterless gasholder, with a capacity of 750,000 cu.ft.

Modern Industrial Finishes.

A new booklet with the above title has recently been published by Donald Macpherson & Co., Ltd. It contains a great deal of valuable information for those interested in the application of modern coloured finishes to gas appliances or in the protection of ferrous metals. A study of the pages of this booklet shows how "Foochow" finishes can improve the appearance of appliances, and the scientific manufacturing processes laid down by the firm's highly qualified paint technicians, coupled with modern research practice, enable them to offer a service from which the user will undoubtedly benefit.

The booklet gives particulars of the firm's free instruction for manufacturers' finishing staffs and goes on to deal with "Foochow" synthetics and oriental lacquer, "Synroz" synthetic enamels, cellulose synthetic finishes for industrial uses, together with some notes on conveyor ovens for "Foochow" finishes. A number of representations of the actual colours of some of the finishes show what beautiful effects can be obtained.

Producer Gas Plants.

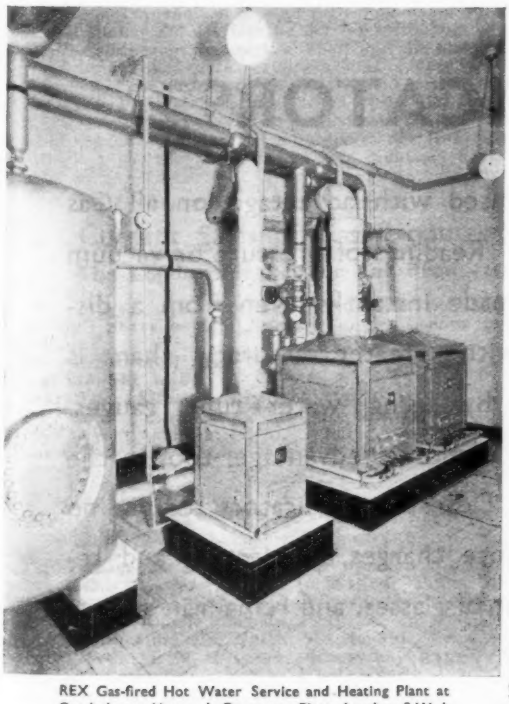
From the Power-Gas Corporation, Ltd., Parkfield Works, Stockton-on-Tees, we have received a copy of their new publication entitled "Producer Gas Plants," in which are described the various types of the Corporation's producers. The range extends from the small static steam jet blown or self-vaporizing unit of 10 lb. per hr. gasification capacity to units of over 100 tons daily capacity, equipped with mechanical charging and ashing gear. When the gas is required in a clean cooled condition, then in conjunction with the producers generating hot raw gas, highly efficient gas cooling and cleaning plant can be supplied, delivering gas suitable for delivery in any type of burner.

The booklet is liberally illustrated, showing examples of the productions which are the results of the world-wide experience gained by the Power-Gas Corporation during the fifty years that the Firm have specialized in the design and production of producer gas plants. The Firm point out that skilful design, allied with robust construction and simple control, resulting in high operating efficiency, has gained a unique reputation for Power-Gas plants.

New Keith-Blackman Lists.

Two lists of considerable interest to the Gas Industry have recently been issued by Messrs. James Keith & Blackman Co., Ltd., 27, Farringdon Avenue, E.C. 4, dealing with the "Keith" system of high-pressure gas for laundries and "Keith" rotary compressors for air or gas. The "Keith" system of applying high-pressure gas for the lighting of laundries and heating laundry hand irons and machines is the result of many years' experience, and its success is amply demonstrated by the hundreds of installations in use throughout the United Kingdom and abroad. Gas only under pressure is used, dispensing with the double pipe necessary with the air blast system, and one system of piping carries the supply for lighting and heating. This simplifies manipulation and control of the heat.

For the "Keith" rotary compressors the makers claim a number of unique features and state that they are the most economical and efficient machines on the market; the material and the workmanship are of the highest class, and they will, with ordinary care, last indefinitely.



REX Gas-fired Hot Water Service and Heating Plant at Gas Industry House, 1, Grosvenor Place, London, S.W. 1

Central Heating by GAS

REX gas-fired heaters with Automatic Controls have been brought to a very high standard of efficiency, and are available in such a wide range of capacities that there is no duty too large or too small for their application.

Freedom from condensation within the flueways, combined with low maintenance cost and continuity of efficiency are special features of merit, which place these Heaters in the forefront of Boiler Equipment in the Gas Industry. They are silent in operation and work under natural draught conditions within the Heater, therefore requiring no forced draught or chimney pull, and the flue Baffler incorporated in the construction isolates the flame from the chimney and external conditions.

✦

CATALOGUE ON REQUEST

✦

These Heaters will be exhibited at the "Ideal Home" Exhibition, Olympia, Stand No. 56, Ground Floor, Grand Hall.

THOMAS POTTERTON (Heating Engineers) LTD.,

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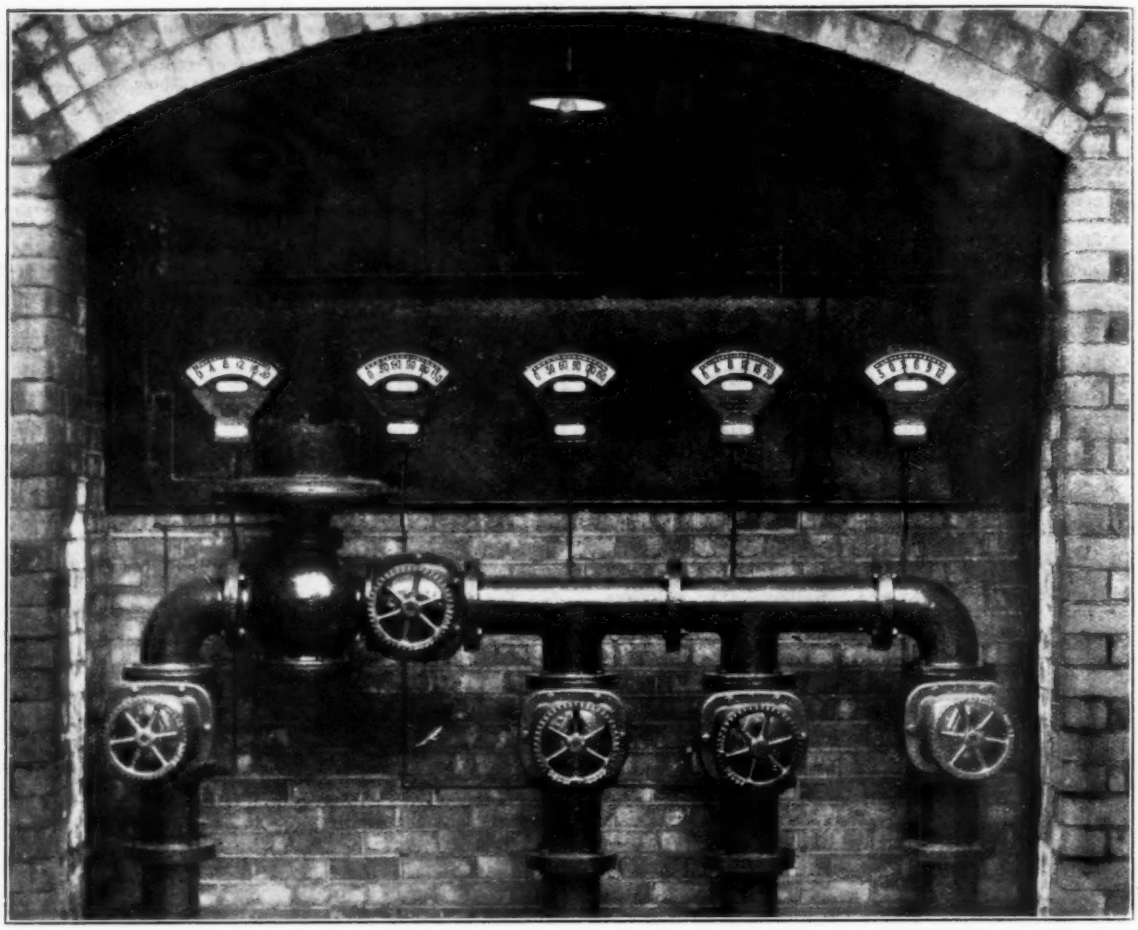
Telephone: Balham 1244-5-6

Telegrams: Potterton, Toot, London



Simmance Patent

DEAD-BEAT INDICATORS

These Indicators can be supplied for ranges 0-1" w.g. (or ·5-0-·5") to 400 lbs., or any intermediate range, either vacuum or pressure, or in any combination.

can be used with advantage on all Gas Works. Readings of pressure or vacuum can be made instantly, even from a distance, with greater accuracy than is possible by using water-tube gauges. There is economic advantage, too, in the fact that Dead-Beat Indicators require no maintenance charges for cleaning and replacement of glasses, and remain in service for many years.

ALEXANDER WRIGHT & CO., LTD. — WESTMINSTER, S.W. 1.

Gas Markets and Manufactures

Stock Market Report

(For Stock and Share Lists see later pages)

Somewhat contrary to expectations, a more confident tone was in evidence on the Stock Exchange last week. Investors have come to the conclusion that the recent reactions were somewhat too drastic and have not been slow in taking advantage of the lower prices. Consequently the volume of business was heavier than the previous week, and in many sections values responded accordingly. British Funds closed fractionally higher, and a satisfactory feature was the increased demand for home rails, many showing good improvement, especially those of the Junior prior-charge variety. A number of leading industrials also shared in the recovery. The mining market on the whole closed weak, copper shares being the most vulnerable by reason of the fall in the price of the commodity, while oils were adversely affected by the sharp fall in Americans. The increase in the quota gave a fillip to rubbers, and with the commodity selling at over 1s. per lb. share values were raised still further.

Business in the Gas Market was again on the small side, and prices so far show very few signs of recovering from their recent reactions. In fact, the reverse is the case, as will be seen in the Stock and Share Lists, for nearly all the movements continued to be in a downward direction. One bright spot last week, however, was the improvement in Imperial Continental stock, which closed 11 points higher at 159½, though this is 30 points below last year's best. The only other increase in the Official List was a gain of 1s. in Colonial 8% preference to 23s. At the Provincial Exchanges, Newcastle units recovered 6d. to 24s., but Liverpool ordinary closed 4 points lower at 123½. In the Supplementary List, several sharp falls occurred, the most noticeable being Hampton Court with a drop of 12½, Oxford with a fall of 10, while Southgate and District was marked down 7½ points.

The accounts of the British Gas Light Company, Limited, for 1936 show a net profit of £82,695 as compared with £91,114 for 1935. There was a small increase in gas sales. General reserve has been increased by a further £15,000, and the Directors are recommending the usual 4% final dividend, making 7½% for the year, the rate paid for many years past. The carry-forward is reduced by £7,450 to £80,878. The ordinary stock, which was marked *ex*-div. on March 1, changed hands last week at 152, and gives a return at this price of £4 18s. 8d.%.

The net profit of the Alliance and Dublin Consumers' Gas Company for the half-year ended Dec. 31 last, amounted to £68,510 (against £67,941 for the corresponding period of 1935), and, after adding an income-tax credit and the amount brought forward from June, there remains a sum of £120,989 available. The Directors are recommending a dividend for the half-year of 4% on the consolidated stock (against £3 16s. 3d.% for the last half of 1935), which will absorb £70,698 and leave a balance forward of £50,291. The stock was quoted *ex*-div. last week at 164½, at which price the yield on an 8% dividend works out at £4 17s. 3d.%.

Current Sales of Gas Products

The London Market for Tar Products.

LONDON, *March* 22.

To-day's prices for Tar Products in the London market are as follows:

Pitch is 36s. to 37s. per ton f.o.b.

Creosote, 5¾d. to 6d.

Refined tar, 3¾d.

Pure toluole, 2s. 4d. to 2s. 5d.; pure benzole, 1s. 7d. to 1s. 8d.; 95/160 solvent naphtha, 1s. 7d. to 1s. 8d.; and 90/160 pyridine, about 8s. 6d.; all per gallon naked at makers' works.

Tar Products in the Provinces.

March 22.

The average prices of gas-works products during the week were: Gas-works tar, 21s. 6d. to 26s. 6d. Pitch—East Coast, 35s. to 36s. f.o.b. West Coast—Manchester, Liverpool, Clyde, 35s. to 36s.* Toluole, naked, North, 2s. to 2s. 1d. Coal tar crude naphtha, in bulk, North, 8½d. to 8¾d. Solvent naphtha, naked, North, 1s. 5d. to 1s. 6d. Heavy naphtha, North, 1s. 2d. to 1s. 3d. Creosote, *ex* works, in bulk, North, liquid and salty, 5d. to 5¼d.; low gravity, 4⅝d. to 4¾d. Heavy oils, in bulk, North, 5d. to 5¼d. Carbolic acid 60's, 2s. 10d. to 2s. 11d. Naphthalene, £18 to £20. Salts, 90s. to 95s., bags included. Anthracene "A" quality, 4½d. to 4¾d. per minimum 40% purely nominal; "B" quality, unsalable.

* All prices for pitch are now quoted on the basis of f.o.b. In order to arrive at the f.a.s. value at any port it will be necessary to deduct the loading costs and the tolls whatever they may be.

Tar Products in Scotland.

GLASGOW, *March* 20.

There is a continued demand for most products and therefore prices remain exceptionally firm.

Crude gas-works tar.—The actual value is 36s. to 37s. per ton *ex* works in bulk.

Pitch is rather dull with value unchanged at 30s. to 32s. 6d. per ton f.o.b. Glasgow for export, and 30s. per ton *ex* works in bulk for home trade.

Refined tar is being enquired for in fair quantities for delivery over the season with prices unchanged at 3d. to 3¼d. per gallon, free on rails for export, and 3¾d. to 4d. per gallon *ex* works in buyers' packages for home trade.

Creosote oil.—Enquiries are more numerous and prices are firm. Specification oil, 5½d. to 5¾d. per gallon; low gravity, 5¾d. to 6d. per gallon; neutral oil, 5¼d. to 5½d. per gallon; all *ex* works in bulk.

Cresylic acid.—The small quantities available command high prices and the following figures can only be taken as approximate: Pale, 97/99%, 3s. 11d. to 4s. 1d. per gallon; dark, 97/99%, 3s. 8d. to 3s. 10d. per gallon; and pale, 99/100%, 4s. 4d. to 4s. 7d. per gallon; all *ex* works in buyers' packages.

Crude naphtha is comparatively quiet, although value is now called 6d. to 6¼d. per gallon *ex* works in bulk, according to quality and district.

Solvent naphtha.—90/160 grade is in good call at 1s. 4d. to 1s. 5d. per gallon, and 90/190 heavy naphtha is steady at 11d. to 1s. per gallon.

Motor benzole is valued at 1s. 4d. to 1s. 4½d. per gallon.

Pyridine.—Prices are nominal at 6s. 6d. to 7s. 6d. per gallon for 90/160 grade, and 7s. 6d. to 8s. 6d. per gallon for 90/140 grade.

Benzole Prices.

These are considered to be the market prices for benzole at the present time:

	s.	d.		s.	d.	
Crude benzole . . .	0	9½	to	0	10	per gallon at works
Motor ,, . . .	1	3	,,	1	3½	,, ,, ,,
90% ,, . . .	1	4	,,	1	4½	,, ,, ,,
Pure ,, . . .	1	8	,,	1	8½	,, ,, ,,

Contracts Advertised To-Day

Boosting Plant.

Neath Gas Department. [p. 804.]

Carburetted Water Gas Plant, &c.

Neath Gas Department. [p. 804.]

Coal.

Birkenhead Corporation. [p. 804.]
Chelmsford Gas Department. [p. 804.]

Compressor (Steam Driven).

Wallasey Gas and Water Department. [p. 804.]

Handling Shovel.

Wallasey Gas and Water Department. [p. 804.]

Lamp Poles.

Dewsbury Gas Department. [p. 804.]

Lamps.

Dewsbury Gas Department. [p. 804.]

Painting.

Southport Gas Department. [p. 804.]
Wigton Rural District Council. [p. 804.]

Retort House Governor.

Dewsbury Gas Department. [p. 804.]

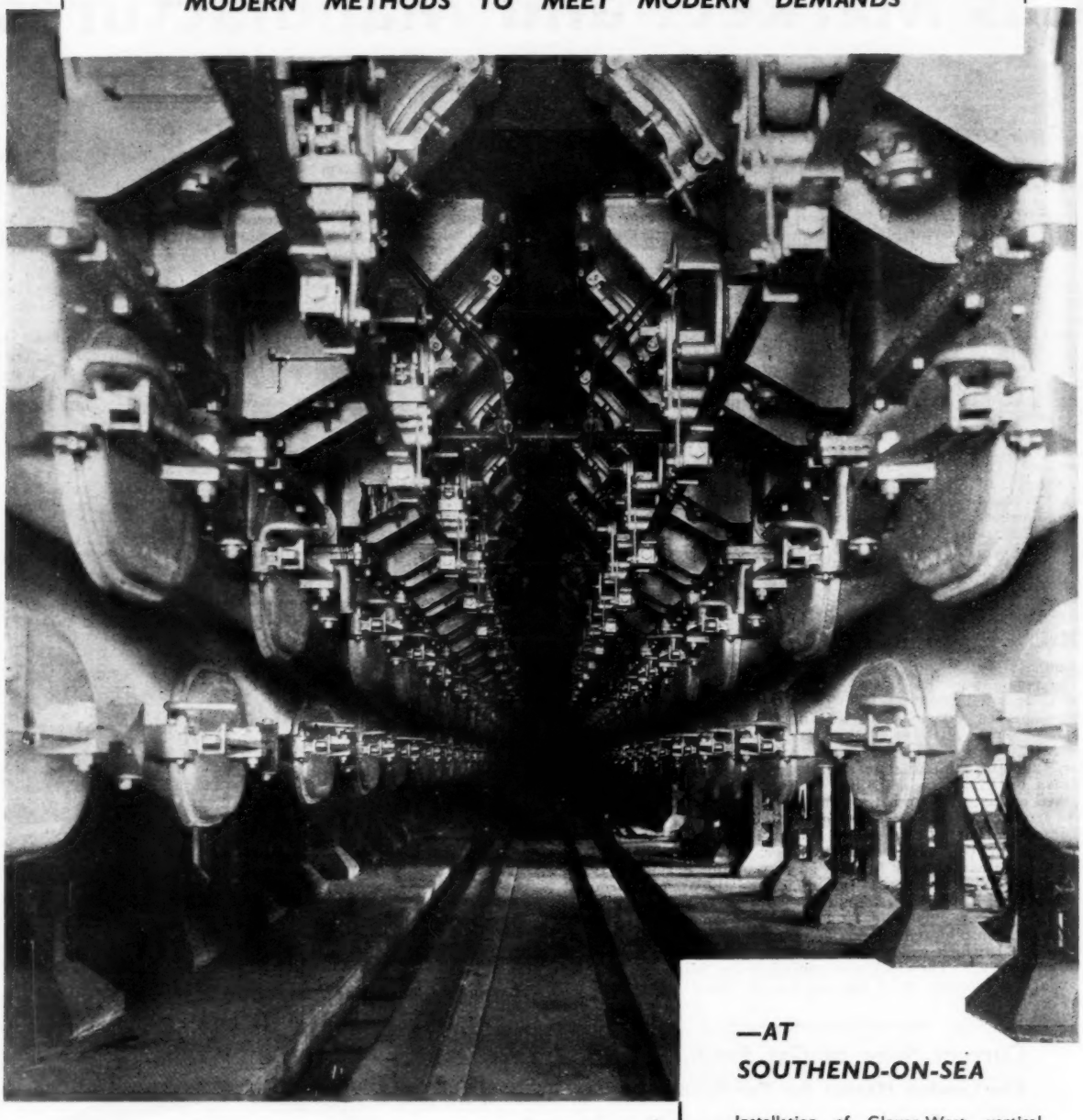
Tubular Steam Raising Plant.

Wallasey Gas and Water Department. [p. 804.]

Vertical Retort Installation.

Neath Gas Department. [p. 804.]

MODERN METHODS TO MEET MODERN DEMANDS



—AT SOUTHEND-ON-SEA

Installation of Glover-West vertical retorts which has now begun regular service at the Southend-on-Sea Station of the Gas Light and Coke Company (London). A view below the retort bench showing coke extractors, coke discharging mouthpieces and West lip bucket conveyors.

405 West-built carbonizing plants erected totalling **10,556** retorts and chambers with a nominal daily make of **579** million c.ft.

THE WEST SYSTEMS

GLOVER-WEST VERTICAL RETORTS ● WESTVERTICAL CARBONIZING CHAMBERS

WEST'S GAS IMPROVEMENT COMPANY, LTD.

MANCHESTER: Albion Ironworks, Miles Platting — 'Phone: COLLYHURST 2961 : 'Grams: "STOKER, MANCHESTER"

LONDON: Columbia House, Aldwych, W.C.2 — 'Phone: HOLBORN 4108 : 'Grams: "WESGASCO, ESTRAND, LONDON."

STOCK AND SHARE LIST

Official Quotations on the London Stock Exchange

Issue. £	Stock or Share	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations Mar. 19.	Rise or Fall on Week.	Transactions, Lowest and Highest Prices During the Week.
1,767,439	Stk.	Mar. 15	8	8	Alliance & Dublin Ord. ...	162—167*	−3	...
374,000	,,	Dec. 14	4	4	Do. 4 p.c. Deb. ...	96—101	...	...
558,890	,,	Feb. 15	7	7	Barnet Ord. 7 p.c.	165—170	...	161—162
300,000	1	Oct. 5	1·9½	1·4½	Bombay, Ltd.	26/—28/-	...	...
179,915	Stk.	Mar. 1	9½	9½	Bournemouth sliding scale ...	195—205	...	...
590,407	,,	,,	7	7	Do. 7 p.c. max. ...	163—168	...	163½
493,960	,,	,,	6	6	Do. 6 p.c. Pref. ...	133—138	...	...
50,000	,,	Dec. 14	3	3	Do. 3 p.c. Deb. ...	80—85	−1	85
262,025	,,	,,	4	4	Do. 4 p.c. Deb. ...	100—105	...	...
335,000	,,	,,	5	5	Do. 5 p.c. Deb. ...	117—122	...	...
357,900	,,	Feb. 15	7½	7½	Brighton, &c., 6 p.c. Con. ...	155—160	...	155—158
649,955	,,	,,	6½	6½	Do. 5 p.c. Con. ...	140—145	...	142—143½
205,500	,,	,,	6	6	Do. 6 p.c. 'B' Pref.	130—135	...	...
855,000	,,	Mar. 1	7	8	British Ord.	150—155	...	152—153
100,000	,,	Dec. 14	7	7	Do. 7 p.c. Pref. ...	143—148	...	...
350,000	,,	,,	5½	5½	Do. 5½ p.c. 'B' Cum. Pref.	110—115	...	...
120,000	,,	,,	4	4	Do. 4 p.c. Red. Deb. ...	95—100	...	...
450,000	,,	,,	5	5	Do. 5 p.c. Red. Deb. ...	103—108	...	...
450,000	,,	,,	3½	3½	Do. 3½ p.c. Red. Deb. ...	95—100	...	...
100,000	10	22 May '33	6	4	Cape Town, Ltd.	1—3	...	...
100,000	10	6 Nov.'33	4½	4½	Do. 4½ p.c. Pref. ...	1½—3½	...	...
150,000	Stk.	Jan. 4	4½	4½	Do. 4½ p.c. Deb. ...	80—85	...	...
626,860	,,	Feb. 1	6	6	Cardiff Con. Ord.	120—125	...	...
237,860	,,	Dec. 14	5	5	Do. 5 p.c. Red. Deb.	107—112	...	...
98,936	1	Oct. 19	2/-	2/-	Colombo Ord.	1½—1¾	...	...
24,510	1	,,	1·4½	1·4½	Do. 7 p.c. Pref. ...	23 6—25 6	...	...
739,453	1	Mar. 15	-/11·48	-/11·48	Colonial Gas Assn. Ltd. Ord.	17/—19/-*	−6	...
296,144	1	,,	1·3·30	1·3·30	Do. 8 p.c. Pref.	22/—24/-	+1/-	...
1,775,005	Stk.	Feb. 1	5	5	Commercial Ord.	88—93	...	...
620,000	,,	Nov. 30	3	3	Do. 3 p.c. Deb. ...	73—78	...	...
286,344	,,	Feb. 15	5	5	Do. 5 p.c. Deb. ...	115—120	...	...
807,560	,,	Feb. 15	7	7	Croydon sliding scale ...	147—152	...	149—151
644,590	,,	,,	5	5	Do. max. div.	109—114	−2	111—112½
620,385	,,	Dec. 14	5	5	Do. 5 p.c. Deb.	115—120	...	...
239,000	,,	Feb. 1	5	5	East Hull Ord. 5 p.c.... ...	100—105	...	100
185,355	,,	Feb. 15	6	6	East Surrey Ord. 5.o.c.	122—127	...	...
176,211	,,	Dec. 14	5	5	Do. 5 p.c. Deb. ...	113—118	−4	...
250,000	1	Nov. 16	6	4	Gas Consolidation Ord. ...	20/—22/-	−/6	...
250,000	1	,,	4	4	Do. 4 p.c. Red Cum. Pref.	19/—21/-	...	...
19,255,284	Stk.	Feb. 1	5½	5½	Gas Light & Coke 4 p.c. Ord.	23·3—24·3a	...	23/6—24/3
2,600,000	,,	,,	3½	3½	Do. 3½ p.c. max.	75—80	−1	76½—79
4,477,106	,,	,,	4	4	Do. 4 p.c. Con. Pref. ...	97—102	...	99½—100½
8,602,497	,,	Nov. 30	3	3	Do. 3 p.c. Con. Deb. ...	78—81	...	78½—80
3,642,770	,,	,,	5	5	Do. 5 p.c. Red. Deb. ...	110—113	...	111½—112
3,500,000	,,	,,	4½	4½	Do. 4½ p.c. Red. Deb....	108—111	...	109½—111
700,000	,,	Mar. 1	25 5s	3½	Do. 3½ p.c. Red. Deb....	96—101	...	99½—101
270,466	,,	Feb. 15	6	6	Harrogate New Cons. ...	122—127	...	...
213,200	,,	Feb. 15	6	6	Hornsey Con. 3½ p.c. ...	125—130	...	125—125½
5,600,000	,,	Nov. 2	12	8	Imperial Continental Cap. ...	157—162	+11	150—165
223,130	,,	Feb. 1	3½	3½	Do. 3½ p.c. Red. Deb. ...	90—95	...	...
285,242	,,	Mar. 1	8½	8½	Lea Bridge 5 p.c. Ord. ...	165—170	...	...
11,751	,,	Mar. 1	8	10	Maidstone Gas 5 p.c. Cap. Stk.	180—190	...	...
63,480	,,	Dec. 14	3	3	Do. 3 p.c.Prp.Db.Sk.	72—77	...	...
75,000	,,	Nov. 30	†10	†10	Malta & Mediterranean ...	150—160	...	153
					Metropolitan (of Melbourne)			
392,000	—	Oct. 1	5½	5½	5½ p.c. Red. Deb.	100—105	...	...
231,978	Stk.	Feb. 15	5	5	M.S. Utility 'C' Cons. ...	102—107	...	...
968,657	,,	,,	4	4	Do. 4 p.c. Cons. Pref.	95—100	...	...
360,075	,,	Dec. 14	4	4	Do. 4 p.c. Deb. ...	97—102	−1	98—99½
148,955	,,	,,	5	†5	Do. 5 p.c. Deb. ...	115—120	...	...
125,000	—	Jan. 4	3½	3½	Do. 3½ p.c. Rd.Rg.Bds.	97—100	...	...
675,000	Stk.	Nov. 16	†6	†6	Montevideo, Ltd.	80—85	...	80—81
250,000	,,	Feb. 15	7½	7½	North Middlesex 6 p.c. Con.	160—165	...	...
396 160	,,	Feb. 1	5	5	Northampton 5 p.c. max. ...	102—107	...	...
300,000	,,	Nov. 2	†7	†9	Oriental, Ltd....	165—170	...	168—169
416,617	,,	Dec. 14	8	8	Plymouth & Stonehouse 5 p.c.	170—175	...	...
621,667	,,	Feb. 15	8½	8½	Portsmouth & Gosport Cons.	170—175	...	172½
241,446	,,	,,	5	5	Do. 5 p.c. max. ...	105—110	−5	110
73,350	,,	,,	...	5	Do. 5 p.c. Pref. ...	112—117	...	...
363,470	1	Sept. 21	1/-	1/-	Severn Val. Gas Cor. Ld. Ord.	20/—22/-	...	20 9—20,10½
454,510	1	Mar. 15	-/10½	-/10½	,, ,, 4½ p.c. Cum. Pref.	20/—22/-*	−1/-	...
133,201	Stk.	Feb. 15	5	8½	Shrewsbury 5 p.c. Ord. ...	133—138	−2	...
90.000	10	June 8	‡3½	‡4	South African...	4—5	...	...
1,152,635	1	Sept. 7	1/2½	1/2½	South East'n Gas. Cn.Ld. Ord.	24-/—26/-	...	...
845,511	1	Mar. 1	-/10½	-/10½	Do. 4½ p.c. Red. Cum. Pref.	20/—22/-	...	20,6
200,000	1	,,	4	4	Do. 4 p.c. Cum. Pref. ...	19/6—21/6	...	...
450,000	,,	Feb. 15	4	4	Do. 4 p.c. Deb.	100—102	...	101
150,000	Stk.	,,	3½	3½	Do. 3½ p.c. Red. Deb. ...	99—101	...	...
6,709,895	,,	Feb. 1	5	6	South Met. Ord.	107—112	...	108—110½
1,135,812	,,	,,	6	6	Do. 6 p.c. Irred. Pf. ...	131—136	...	131—132½
850,000	,,	,,	4	4	Do. 4 p.c. Irred. Pf. ...	96—101	...	...
1,895,445	,,	Dec. 14	3	3	Do. 3 p.c. Deb. ...	73—78	...	77
1,000,000	,,	Jan. 4	5	5	Do. 5 p.c. Red. Deb....	107—112	...	109½
1,543,795	,,	Feb. 1	6	6	South Suburban Ord. 5 p.c....	122—127	...	124
512,825	,,	,,	5	5	Do. 5 p.c. Pref....	112—117	...	113—115
500,000	,,	,,	4	4	Do. 4 p.c. Pref....	95—100	−2	95
888,587	,,	Dec. 14	5	5	Do. 5 p.c. Deb....	115—120	...	117
250,000	,,	,,	4	4	Do. 4 p.c. Deb....	98—103	...	...
427,859	1	Nov. 16	1/2½	9½	S. Western Gas & Water Ord.	20/—22/-	...	...
160,523	1	Oct. 19	-/10½	-/10½	Do. 4½ p.c. Red. Cum. Pf.	20/6—22/6	...	...
110,000	Stk.	Dec. 14	4	4	Do. 4 p.c. Red. Deb. ...	98—103	...	...
750,541	,,	Feb. 1	5	5½	Southampton Ord. 5 p.c. ...	111—116	...	...
148,836	,,	Jan. 4	4	4	Do. 4 p.c. Deb.	98—103	...	...
350,000	,,	Feb. 15	5½	5½	Swansea 5½ p.c. Red. Pref. ...	110—115	...	...
106,000	,,	Jan. 4	6½	6½	Do. 6½ p.c. Red. Deb. ...	98—101	...	...
94,000	,,	,,	3½	3½	Do. 3½ p.c. Red. Deb. ...	95—100	...	...
1,076,490	,,	Feb. 15	6½	6½	Tottenham and District Ord.	137—142	−1	141—142
409,835	,,	,,	5½	5½	Do. 5½ p.c. Pref....	123—128	−2	...
62,235	,,	,,	5	5	Do. 5 p.c. Pref. ...	110—115	...	...
371,850	,,	Nov. 30	4	4	Do. 4 p.c. Deb. ...	98—103	...	...
373,939	,,	Feb. 15	7	7	Uxbridge, &c., 5 p.c. ...	142—147	...	...
133,010	,,	,,	5	5	Do. 5 p.c. Pref. ...	110—115	...	...
1,371,138	,,	Feb. 1	7	7	Wandsworth Consolidated ...	142—147	...	143
1,620,615	,,	,,	5	5	Do. 5 p.c. Pref ...	113—118	...	...
500,000	,,	,,	33/4	4	Do. 4 p.c. Pref. ...	96—101	...	98
1,343,964	,,	Dec. 14	5	5	Do. 5 p.c. Deb. ...	117—122	...	119—120
383,745	,,	,,	4	4	Do. 4 p.c. Deb. ...	98—103	...	...
558,342	,,	Feb. 1	7	7	Watford and St. Albans Ord.	142—147	−2	...
200.000	,,	,,	5	5	Do. 5 p.c. Pref. ...	110—115	...	113
200,000	,,	,,	5½	5½	Do. 5½ p.c. Pref. ...	123—128	−2	...
200.000	,,	Dec. 14	4	4	Do. 4 p.c. Red. Deb.	97—102	...	...
100,000	,,	,,	3½	3½	Do. 3½ p.c. Red.Deb.	95—100	...	...

a.—The quotation is per £1 of Stock. * Ex div. † Paid free of income-tax. ‡ For year. § Actual.

Stock and Share List continued overleaf.

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STOCK AND SHARE LIST—Cont.

Stocks Officially Quoted on Provincial Exchanges

Issue. £	Stock or Share	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations. Mar. 19.	Rise or Fall on Week.	Transactions, Lowest and Highest During the Week.
BRISTOL EXCHANGE.								
347,756	Stk.	Feb. 1	5	6	Bath Cons.	121—123	...	...
1,667,250	,,	Feb. 15	5	5	Bristol, 5 p.c. max.	115—118	-1½	...
120,420	,,	Dec. 14	4	4	Do. 1st 4 p.c. Deb. ...	101—103	-1	...
217,870	,,	,,	4	4	Do. 2nd 4 p.c. Deb. ...	101—103	-½	...
328,790	,,	,,	5	5	Do. 5 p.c. Deb.	122—125	...	...
274,000	,,	Mar. 1	5	5	Newport (Mon.) 5 p.c.max. ...	108—112	...	...
13,200	12	Mar. 15	7	8	Pontyp'l Gas & W. 10 p.c. 'A'	13½—14½	-½	...
13,600	10	,,	5	6	Do. 7 p.c. 'B'	12—12½	-½	...
40,000	10	,,	5	6	Do. 7 p.c. 'C'	12—12½	-½	...
140,778	Stk.	Feb. 1	5	5	Weston-super-Mare Cons. ...	112—113	...	...
64,338	,,	Dec. 14	4	4	Do. 4 p.c. Deb.	98—101	...	...
33,340	,,	,,	7½	7½	Do. 7½ p.c. Deb.	160—163	...	...
LIVERPOOL EXCHANGE.								
157,150	Stk.	Feb. 1	5	6½	Chester 5 p.c. Ord.	106—111	...	...
92,500	,,	Dec. 14	4½	4	Do. 4 p.c. Pref.	98—102	...	...
36,430	,,	,,	3	3½	Do. 3½ p.c. Deb.... ...	90—95	...	...
41,890	,,	,,	4	4	Do. 4 p.c. Red. Deb. ...	99—103	...	...
2,167,410	,,	Feb. 15	6	6	Liverpool 5 p.c. Ord. ...	123—124	-4	...
245,500	,,	Dec. 14	5	5	Do. 5 p.c. Red. Pref. ...	101—106	...	...
306,083	,,	Jan. 4	4	4	Do. 4 p.c. Deb. ...	103—105	...	...
106,280	,,	Feb. 1	10	10	Preston 'A' 10 p.c.	210—220	...	...
188,219	,,	,,	7	7	Do. 'B' 7 p.c.	150—160	...	...
NEWCASTLE EXCHANGE.								
122,577	Stk.	Feb. 1	8	8	Blyth 5 p.c. Ord.	166—168	...	...
732,000	,,	Feb. 15	5	5	Hartlepool G. & W. Cn. & New	125—127	...	...
2,061,315	,,	Feb. 1	5	5½	Newcastle & Gateshead Con.	23/9—24/3a	+-/6	...
682,856	,,	,,	4	4	Do. 4 p.c. Pref. ...	95—96	...	...
776,706	,,	Jan. 4	3½	3½	Do. 3½ p.c. Deb. ...	95—100	...	...
277,285	,,	Nov. 2	5	5	Do. 5 p.c. Deb. '43...	108—109	...	...
332,351	,,	Feb. 1	6	6	Sunderland 6 p.c. max. ...	139—141	...	...
NOTTINGHAM EXCHANGE.								
542,270	Stk.	Mar. 1	7	9	Derby Con.	160—180	...	...
55,000	,,	Dec. 14	4	4	Do. 4 p.c. Deb.	100—105	...	...
84,750	,,	Feb. 17	5	12	Long Eaton 'A' Ord. ...	...	...	...
50,000	,,	,,	4	10	Do. 'B' Ord. ...	...	...	...
20,000	10	Dec. 14	5	5	Do. 5 p.c. Pref. ...	10—12	...	...
80,000	Stk.	,,	5	5	Do. 5 p.c. Deb. ...	105—110	...	...
SHEFFIELD EXCHANGE.								
10,000	Stk.	Aug. 10	10	10	Great Grimsby 'A' Ord. ...	210—220	...	...
6,500	,,	,,	10	10	Do. 'B' Ord. ...	210—220	...	...
79,000	,,	,,	10	10	Do. 'C' Ord. ...	205—210	-2½	...
1,806,339	,,	Feb. 15	6	6½	Sheffield Cons.	144—146	...	...
95,000	,,	Jan. 4	4	4	Do. 4 p.c. Deb.	101—104	...	...

Supplementary List of Stocks and Shares not Officially Quoted

202,152	Stk.	Mar. 15	25/-b	25/-b	Ascot Ord.	102—107*	-3	...
128,182	,,	Jan. 4	5	5	Do. 5 p.c. Pref.	110—115	...	...
312,083	1	Nov. 16	5	5	Assd. Gas and Water Ord. ...	19/6—21/6	...	...
326,071	1	,,	4½	4½	Do. 4½ p.c. Cum. Pref. ...	19/6—21/6	...	...
150,000	Stk.	Mar. 15	3½	3½	Do. 3½ p.c. Red. Deb. ...	95—100*	-1	97⅞—98½
17,000	,,	Feb. 15	8	8	Bognor Orig. Ord. 'A' ...	160—170	...	...
62,210	,,	,,	8	8	Do. New Addl. 'A' ...	160—170	...	...
87,160	,,	,,	7	7	Do. New 7 p.c. max. ...	140—145	...	...
37,440	,,	Feb. 1	10	10	Cam. Univ. & Town 10 p.c.max.	200—210	...	...
125,970	,,	,,	7	7	Do. 7 p.c. max.	142—147	...	...
39,025	,,	,,	5	5	Do. 5 p.c. max.	102—107	...	...
65,000	,,	Mar. 1	7½	8½	Eastbourne 'A' 5 p.c. ...	160—165	...	...
198,000	,,	,,	6	7	Do. 'B' 3½ p.c.	130—140	+2½	...
112,312	,,	,,	5	5	Do. 5 p.c. Pref.	110—115*	...	...
130,000	,,	Dec. 14	5	5	Do. 5 p.c. Deb.	115—120	...	...
24,000	30	Feb. 1	8½	8½	Great Yarmouth 8½ p.c. max.	45—50	-5	...
59,400	30	,,	7½	7½	Do. 7½ p.c. max.	40—45	-½	40½
51,160	Stk.	Dec. 14	5½	5½	Do. 5½ p.c. Deb.	122—127	...	...
152,600	,,	Feb. 15	8	9	Guildford Cons.	190—200	...	...
54,055	,,	,,	5	5	Do. 5 p.c. Pref.	112—117	...	...
68,250	,,	Dec. 14	5	5	Do. 5 p.c. Deb.	115—120	...	...
156,600	,,	Feb. 15	7½	7½	Hampton Court Cons. ...	150—160	-12½	150
107,960	10	Mar. 15	4	5½	Mid Kent Ord.	9—10	-½	...
230,940	Stk.	Feb. 15	10	10	Oxford & District Ord. ...	200—210	-10	...
47,112	,,	,,	5	5	Do. 5 p.c. Pref.	110—115	...	110½
50,000	,,	,,	6	6	Do. 6 p.c. Red. Pref. ...	112—117	...	...
126,193	,,	Nov. 16	7½	7½	Peterborough Ord.	162—172	...	...
64,990	,,	Mar. 15	6½	7½	Redditch Ord.	127—137*	-3	...
166,850	,,	Feb. 15	8	8	Romford Ord.	157—167	...	...
60,000	,,	,,	4	4	Do. 4 p.c. Pref.	97—100	...	...
44,000	,,	Mar. 15	5	5	Do. 5 p.c. Deb.	115—120*	...	...
10,950	,,	Mar. 1	8	8	Ryde Ord.	160—165	...	...
136,191	,,	Feb. 15	5	7	Scarborough Ord.	123—133	...	...
27,825	,,	Feb. 1	8	8	Shanklin & Ventnor Cons. ...	165—175	...	...
270,086	,,	Mar. 15	7	7	Slough Ord.	137—142*	-5½	...
21,000	,,	Dec. 14	5	5	Do. 5 p.c. Deb.... ...	113—118	...	...
28,872	1	Nov. 2	5½	5½	S. Midland Gas Cpn. Ltd. Ord.	19/—22/-	...	...
28,866	1	Mar. 15	4½	4½	Do. 4½ p.c. Red. Cum. Pref.	18/6—20/6*	-1/-	...
137,730	Stk.	Feb. 15	7	7	Southgate & Dist. 7 p.c. max.	135—145	-7½	...
62,500	,,	,,	5	5	Do. 5 p.c. Pref.	110—115	...	...
117,228	,,	Feb. 15	6	5	Swindon Cons.	108—113	...	...
60,425	,,	Dec. 14	5	5	Do. 5 p.c. Deb.	113—118	...	...
64,380	,,	Dec. 14	5	5	Torquay and Paignton 5 p.c. Pf.	115—120	...	...
750,000	1	Oct. 5	5·52d.a	4	Utd. Kingdom Gas Cpn. Ord.	20/—22/-	...	21/—21/9
936,338	1	Nov. 16	4½	4½	Do. 4½ p.c. 1st Cum. Pref.	20/—22/-	...	20/3
674,084	1	Oct. 5	4½	4½	Do. 4½ p.c. 2nd Non-Cum. Pref.... ...	20/—22/-	...	19/6
600,000	Stk.	Mar. 15	3½	3½	Do. 3½ p.c. Red. Deb. ...	96—101*	-2	100
130,000	,,	Feb. 15	5	8	Wakefield Ord.	137—142	...	...
81,650	,,	,,	5	5	Do. 5 p.c. max.	103—108	...	...
82,000	,,	Feb. 1	6	6	Weymouth Ord.	103—108	...	...
98,384	,,	Feb. 1	6*	6*	Wolverhampton 6 p.c. Pref....	125—130	...	...
160,000	,,	Dec. 14	5½	5½	Do. 5½ p.c. Rd. Db	110—115	...	...
370,000	,,	Feb. 15	4	6	York Cons.	105—110	...	...
90,000	,,	Dec. 14	5	5	Do. 5 p.c. Red. Deb. ...	105—110	...	...
133,640	,,	Mar. 1	6½	6½	Yorktown (Cam.) 5 p.c ons.	130—135	...	...
120,000	,,	,,	5	5	Do. 5 p.c. Pref.	110—115	...	...
35,000	,,	Dec. 14	5½	5½	Do. 5½ p.c. Deb.	125—130	...	...

a The quotation is per £1 of Stock. *b* Actual for Quarter. * Ex div.

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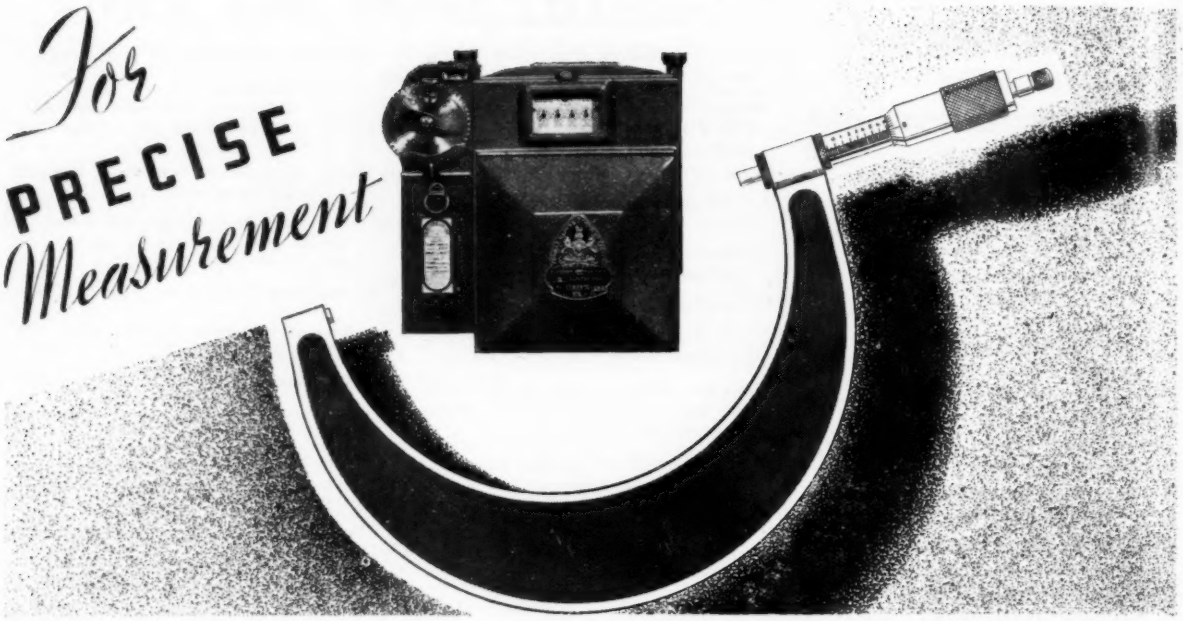

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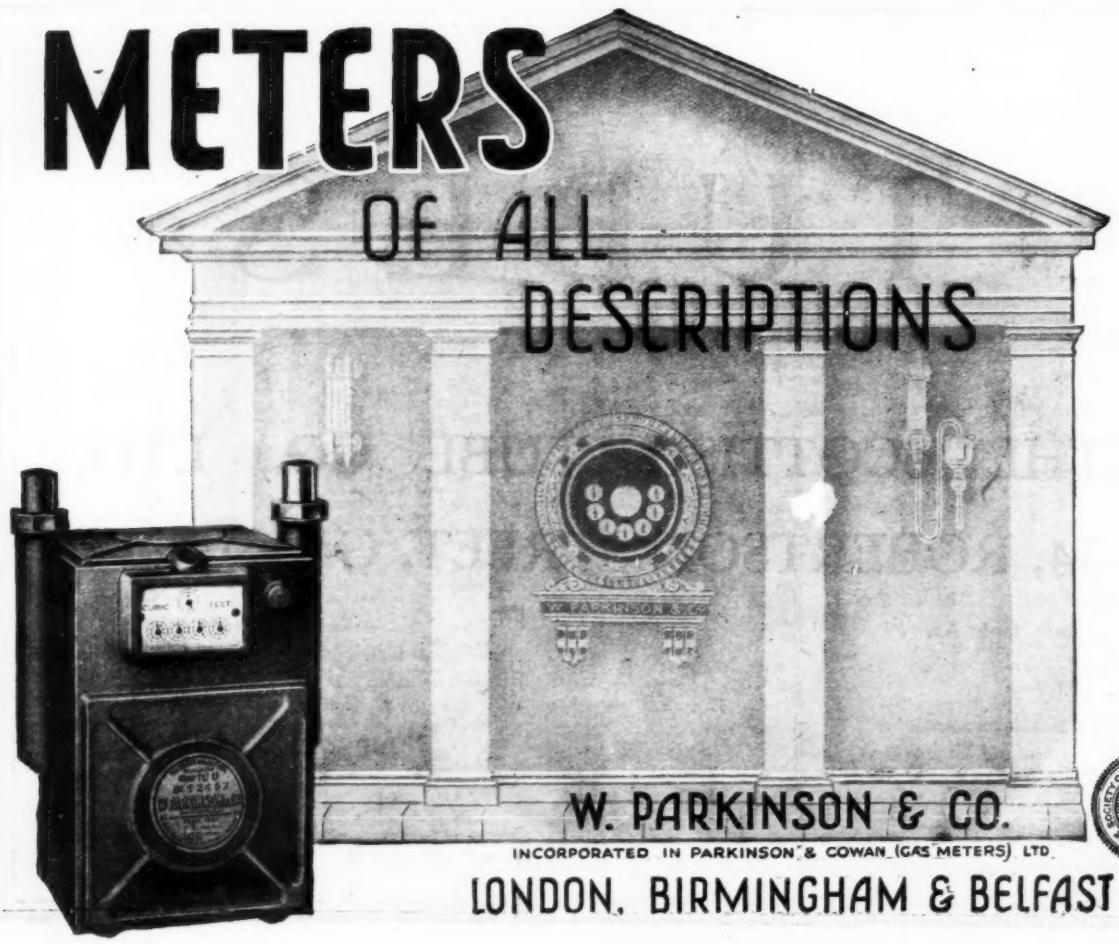

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